INDICATIVE PROJECT SUMMARIES

SECTION 319 NONPOINT SOURCE COMPETITIVE GRANTS PROGRAM

FFY 2002 - 2006

Massachusetts Department of Environmental Protection
Bureau of Resource Protection
Mary Griffin, Assistant Commissioner

2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NONPOINT SOURCE PROGRAM
INDICATIVE PROJECT SUMMARIES

FFY 2002 – 2006

Prepared by:
Jane Peirce, 319 Program Coordinator

Massachusetts Executive Office of Environmental Affairs
Robert W. Golledge, Jr., Secretary

Department of Environmental Protection
Arleen O'Donnell, Acting Commissioner

Bureau of Resource Protection
Mary Griffin, Assistant Commissioner

Division of Watershed Management
Glenn Haas, Director

Division of Municipal Services
David DeLorenzo, Acting Director

2006

NOTICE OF AVAILABILITY

Limited copies of this report are available at no cost by written request to:

Division of Watershed Management
Massachusetts Department of Environmental Protection
627 Main Street, 2nd floor
Worcester, MA 01608

This report is also available from MassDEP's home page on the World Wide Web at
http://mass.gov/dep/water/grants.htm

Furthermore, at the time of first printing, eight (8) copies of each report by this office are submitted to the State Library at the State House in Boston; these copies subsequently are distributed as follows:

- On shelf; retained at the State Library (two copies);
- Microfilmed; retained at the State Library;
- Delivered to the Boston Public Library at Copley Square;
- Delivered to the Worcester Public Library;
- Delivered to the Springfield Public Library;
- Delivered to the University Library at UMass, Amherst;
- Delivered to the Library of Congress in Washington, DC.

Moreover, this wide circulation is augmented by inter-library loans from the above-listed libraries. For example, a resident of Winchendon can apply at the local library for a loan of the Worcester Public Library's copy of any MassDEP/Division of Watershed Management report.

A complete list of reports published since 1963 is updated and printed in July. This report, entitled, "Publications of the Massachusetts Division of Watershed Management, 1963 - (current year)," is available by writing to the DWM in Worcester. The report can also be found at MassDEP's web site, at http://mass.gov/dep/water/priorities/priorities.htm

TABLE OF CONTENTS

Indicative Project Summaries - FFY 2004:

Indicative Project Summaries - FFY 2005:

Indicative Project Summaries - FFY 2006:

Indicative Summaries by Basin, FFY 2002 - 2006

French
No projects

Housatonic

Ipswich

Islands

Hudson (Hoosic, Kinderhook, BashBish)
No projects

Merrimack

Millers

Narragansett Bay/Mt. Hope
No projects

Nashua

North Coastal

Parker
No projects

Quinebaug

Shawsheen
No projects

South Coastal

INTRODUCTION

This report presents indicative summaries of the projects partially financed by the Section 319 Massachusetts Nonpoint Source Competitive Grants Program during federal fiscal years (FFY) 2002 through 2006. Projects funded from the inception of the program in 1990 through 2001 are listed in the Appendix at the end of this report.

Congress annually appropriates funds under Section 319 (319) of the Clean Water Act of 1987 (33 U.S.C.A., Sc. 1251 et. seq.) to assist states in implementing their approved nonpoint source (NPS) programs. Section 319 is administered by the US Environmental Protection Agency (EPA), which oversees the awards to individual states. The Massachusetts Department of Environmental Protection (Department), Bureau of Resource Protection, administers this award as part of the Massachusetts Nonpoint Source Program.

The 319 program focuses on the implementation of activities and projects for the control of nonpoint source pollution. EPA defines NPS pollution as that which is "caused by diffuse sources that are not regulated as point sources and are normally associated with precipitation and runoff from the land or percolation." The awards are intended to provide financial support for the state's programs for controlling the major statewide categories of NPS pollution or for protecting or improving NPS-impaired or threatened targeted water resources.

Each year, a portion of the 319 funds awarded to the state is used for specific watershed implementation projects that improve or protect threatened or impaired priority freshwater and coastal waters. Projects funded under this program must implement measures that address the prevention, control, and abatement of NPS pollution, and must result in restoration of beneficial uses or achieving or maintaining state water quality standards. A Request for Responses for competitive projects is issued by the Massachusetts Department of Environmental Protection in the spring. Proposals may be submitted by any interested Massachusetts public or private organization. The Department encourages all types of eligible, competitive proposals from all watersheds.

Since FFY '01, the Department has particularly encouraged proposals that will begin implementation of Massachusetts's Total Maximum Daily Load (TMDL) analyses, or that implement recommendations made in Diagnostic/Feasibility (D/F) or other studies for waters that do not meet Water Quality Standards. The Department also continues to encourage applicants to propose projects that support the Department's ongoing basin-wide water quality activities. The Massachusetts Nonpoint Source Management Plan (http://mass.gov/dep/water/resources/nonpoint.htm), which was updated in 2001, now includes Section IV, Nonpoint Source Action Strategies, is a primary source of information for identification of comprehensive, 319-eligible projects that will lead to water quality improvement. The Nonpoint Source Action Strategies are compiled in table format to show the Category 5/303(d) impairments shown on the Massachusetts Integrated List of Waters (http://mass.gov/dep/water/resources/tmdls.htm), other outstanding water quality issues, data/information sources, and recommendations that address the water quality impairments for each of the 27 major watersheds.

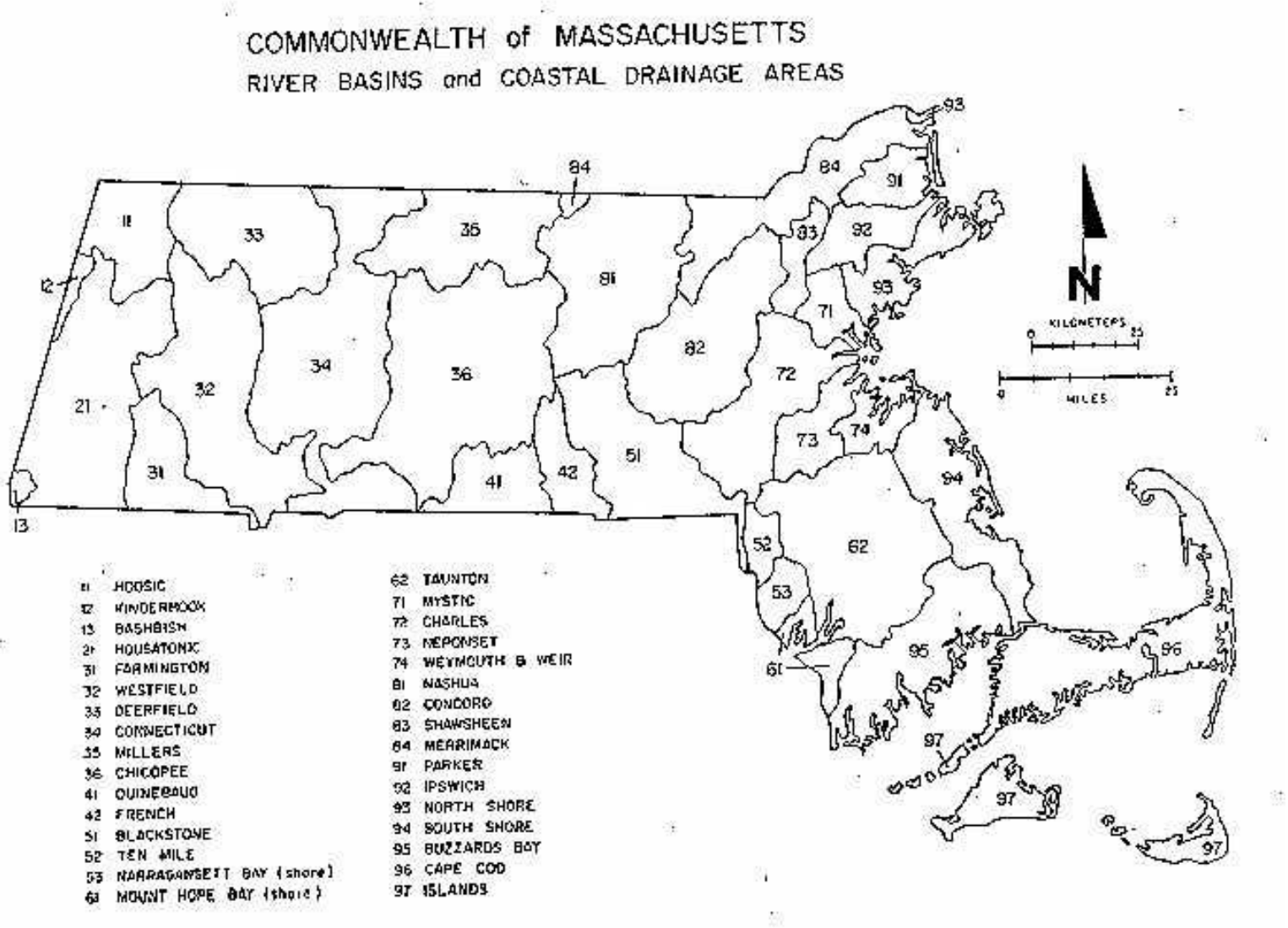
An internal screening committee reviews all eligible 319 proposals. Projects selected by the Department for funding are included in the Department's yearly program plan, which is submitted to EPA prior to the start of the federal fiscal year. Once the program plan has been approved, the Department enters into a contractual agreement with the applicant to conduct the project.

A 40% non-federal match is required from the grantee. This match may be cash or from in-kind services performed as part of the approved project activities. Unless specifically recommended in a TMDL, research, program development, assessment, planning, and water quality monitoring for assessment purposes are not considered implementation activities and are not eligible for 319 funding or match credit. The typical project timeline is for three years. A Quality Assurance Project Plan and an Operation and Maintenance Plan are required for each implementation project.

In March of 2006, MassDEP developed and received EPA approval for a Program QAPP that covers all projects that do not have a sampling component. The Program QAPP applies to FFY 2006 implementation projects as well as some projects from previous years.

Final reports for completed projects are available from the Division of Watershed Management, Massachusetts Department of Environmental Protection, 627 Main Street, Worcester, MA 01608, 508-792-7470.

The Massachusetts river basins used in watershed planning are illustrated in Figure 1. Table 1 shows a comparison between the total number of projects funded through the 319 program in each basin, and the total project costs in each basin since the inception of the program in 1990. Indicative summaries are presented in numerical order rather than by the fiscal year in which the project was selected.


COMMONWEALTH of MASSACHUSETTS
RIVER BASINS and COASTAL DRAINAGE AREAS
N
KILOMETERS
MILES
11 HOOSIC
12 HINDERMOOK
13 BASHBISH
21 HOUSATONIC
31 FARMINGTON
32 WESTFIELD
33 DEERFIELD
34 CONNECTICUT
35 MILLERS
36 CHICOPEE
41 QUINEBAUG
42 FRENCH
51 BLACKSTONE
52 TEN MILE
53 NARRAGANSETT BAY (shore)
61 MOUNT HOPE BAY (shore)
62 TAUNTON
71 MYSTIC
72 CHARLES
73 NEPONSET
74 WEYMOUTH & WEIR
81 NASHUA
82 CONCORD
83 SHAWSHEEN
84 MERRIMACK
91 PARKER
92 IPSWICH
93 NORTH SHORE
94 SOUTH SHORE
95 BUZZARDS BAY
96 CAPE COD
97 ISLANDS

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
Number of 319 Projects and Allocation of Funds by Basin (1990-2006)

Table I

Basin Name	Number of Projects	Dollars Allocated (match plus 319 funds)
Hudson (Hoosic, Kinderhook, BashBish)	0	0
Housatonic	12	$ 1,515,850
Deerfield	2	$ 62,500
Westfield	3	$ 568,670
Farmington	4	$ 173,200
Connecticut	11	$ 2,065,000
Millers	2	$ 704,330
Chicopee	5	$ 799,400
Quinebaug	1	$ 86,700
French	0	0
Nashua	6	$ 837,320
Blackstone	8	$ 2,037,640
Merrimack	5	$ 620,600
Concord (SuAsCo)	8	$ 1,110,560
Shawsheen	0	0
Parker	1	$ 88,300
Ipswich	2	$ 460,000
North Coastal	4	$ 453,600
Boston Harbor (Mystic, Neponset, Weymouth & Weir)	11	$ 2,553,730
Charles	8	$ 1,591,520
South Coastal	15	$ 3,476,250
Cape Cod	14	$ 1,636,700
Islands	2	$ 218,600
Buzzards Bay	19	$ 2,560,800
Taunton	3	$ 146,800
Narragansett Bay & Mount Hope Bay	0	0
Ten Mile	1	$ 260,800
Statewide	38	$ 4,031,610
Total for 1990-2006	**185**	**$27,963,560**

Notes:

- Where projects encompass more than one basin, the grant allocation has been divided evenly among basins.
- Dollar amounts shown are total project costs and include 40% non-federal matching funds.
- All dollar amounts are rounded to the nearest $10.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 00-12/319

PROJECT TITLE: Salisbury Pond Resource Restoration
NPS CATEGORY: Resource Restoration
INVESTIGATOR: City of Worcester Parks, Recreation and Cemetery Department
LOCATION: Blackstone River Watershed

DESCRIPTION:

Salisbury Pond is experiencing rapid filling due to sedimentation from upstream development and urban runoff. Several studies have been done on Salisbury Pond, including a 1987 D/F study and a 2000 MA DEP sediment investigation. A draft TMDL identified high phosphorus levels as the cause of high algal blooms and aquatic macrophytic vegetation. Contaminated sediment and high bacteria counts have also been problematic.

The project will design and install a structural BMP at the pond's main inlet to reduce phosphorus and sediment entering the pond. Two sediment chambers will be installed in upstream tributaries, with an anticipated 80% reduction in grit and oil. A steering committee will meet monthly to provide project oversight and facilitate public participation in the project.

Tasks to be completed under this project include:

1. Design, permitting and construction of structural best management practices at the main inlet to Salisbury Pond;

2. Design and construction of two underground sediment/contaminant removal systems in two subwatersheds, the Park Avenue outfall and the Weasel Brook subwatershed;

3. Maintenance of BMPs and sediment/contaminant removal systems;

4. Development and implementation of a DEP- and EPA-approved QAPP; and

5. Outreach and education through storm drain stenciling and an educational kiosk.

PROJECT COST: $ 297,000

FUNDING:

$174,000 by the US EPA	$ 5,000 by Tighe and Bond
$ 14,000 by Worcester Polytechnic Institute	$61,500 by the Worcester DPW
$ 1,000 by the Regional Environmental Council	$ 9,000 by the Norton Company
$ 8,000 by the Mill Brook Task Force	$ 1,000 by Frost Manufacturing
$15,000 by the Worcester Parks Department	$ 3,000 by the MA Dept. of Public Health
$ 4,000 by Massachusetts Audubon Society	

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 00-13/319

PROJECT TITLE:	Implementation of Nutrient Management Standards on Massachusetts Crop/Livestock Farms to Reduce the Risk of Nonpoint Source Pollution
NPS CATEGORY:	Agriculture
INVESTIGATOR:	UMass/Amherst
LOCATION:	Statewide

DESCRIPTION:

The goal of this project is to reduce the risk of nonpoint source pollution from crop/livestock farms through implementation of best nutrient management practices by farmers. This project complements and builds upon a previous 319 grant, Project 00-06/319, "Management Strategies for Massachusetts Dairy Farms to Reduce the Risk of Nonpoint Source Pollution." The new grant will use the tools developed in Project 00-06/319 to further work with farmers and encourage their participation in Comprehensive Nutrient Management Planning.

Tasks under this grant include:

1. Coordination of an inter-agency and farmer advisory committee;

2. Publication of written standards and guidelines for nutrient management practices;

3. Summary of available resources including educational materials, Internet resources, and a list of trained nutrient management planners;

4. Case studies based on development and implementation of nutrient management plans on selected farms;

5. Regional educational workshops and meetings for farmers and professionals; and

6. On-farm demonstrations of nutrient planning and best management practices.

PROJECT COST:	$289,192
FUNDING:	$ 154,620 by the US EPA $ 134,572 by the University of Massachusetts
DURATION:	2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 00-14/319

PROJECT TITLE:	Forestry Best Management Practices (BMP) Implementation Monitoring Protocol Project
NPS CATEGORY:	Forestry
INVESTIGATOR:	Massachusetts Department of Environmental Management
LOCATION:	Westfield Watershed and Statewide

DESCRIPTION:

The purpose of the project is to develop a forestry BMP monitoring protocol for use in evaluating and monitoring the effectiveness of BMPs in controlling NPS pollution, in conjunction with forest harvesting operations conducted under the state's Forest Cutting Practices Act, Ch. 132 s. 40-48. Tasks include development of assessment methods to evaluate the effectiveness of BMPs contained in the Massachusetts Forestry BMP Manual, which are required in the MA Forest Cutting Practices Regulations. This will result in the development of performance standards for forestry BMPs. A draft field manual will be developed explaining the measurement and interpretation procedures. Field surveys on completed harvests in the Westfield watershed will be conducted to test the monitoring protocol, and the manual will be adjusted based on those findings.

The project is consistent with Forestry Actions/Implementation efforts outlined in the Massachusetts Nonpoint Source Management Plan, Volume I, p. 46. As forestry activity is generally regarded to be a source of nonpoint source pollution, particularly phosphorus, the development of performance standards and a rigorous investigation into the effectiveness of forestry BMPs will greatly enhance efforts to implement TMDLs in forested watersheds.

Tasks to be completed under this grant include:

1. Development of reliable assessment methods for evaluating forestry BMPs;

2. Development of performance standards for forestry BMPs;

3. Field surveys on completed harvests in the Westfield Basin to test the protocols and assessment methods being developed and tested; and

4. A field manual explaining the BMP evaluation procedures and performance standards.

PROJECT COST:	$118,203
FUNDING:	$ 70,922 by the US EPA $ 47,281 by the Massachusetts Department of Environmental Management
DURATION:	2002 – 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 00-15/319

PROJECT TITLE: Revision of the Massachusetts Nonpoint Source Management Manual
NPS CATEGORY: General
INVESTIGATOR: GeoSyntec Consultants
LOCATION: Statewide

DESCRIPTION:

The purpose of this consultant contract is to develop and republish a nonpoint source pollution (NPS) management guide for municipal officials on behalf of the Department of Environmental Protection. The Massachusetts Nonpoint Source Management Manual (Manual) was originally published in 1993. The Manual described nonpoint source pollution problems that cause degradation of water quality. The Manual also identified and explained the human activities and multiple land uses associated with NPS pollution problems. Management alternatives for NPS problems were covered in terms of applicable federal, state, and local regulatory programs and appropriate Best Management Practices (BMPs). The Manual was written and designed to be user friendly to local officials who have little or no background knowledge or training in NPS pollution control.

Although the Manual is still useful to local officials, the information is dated and incomplete. The scope of the literature and research on NPS issues has broadened considerably since publication of the Manual, and a great deal of new material is available on the topic. In addition, new regulatory and funding programs such as the Stormwater Management Policy, the Rivers Protection Act, the Total Maximum Daily Load (TMDL) Program, National Pollution Discharge Elimination Program (NPDES), Phase II, the Source Water Protection Program, the 319 and 604b competitive grant programs, and the State Revolving Funds have been established to address NPS problems. Consequently, revisions to the Massachusetts NPS Manual must reflect current knowledge of the subject and new or revised regulatory programs. The revised Manual will be restructured to maximize accessibility of information in electronic format as well as in print.

The project deliverable is a nonpoint source management manual for Massachusetts municipal officials, based on the 1993 Massachusetts Nonpoint Source Management Manual. Revisions to the Manual will reflect current knowledge of the subject and must include information about new regulatory programs and funding options, still in a user-friendly format. The final product will be produced in three versions: hard copy, CD ROM, and Web-based.

Tasks to be completed under this grant include:

1. Development of a revised Massachusetts Nonpoint Source Management Manual in three versions: hard copy, Web-based, and CD-ROM; and
2. A distribution plan that will identify a strategy for effective distribution and evaluation of the revised Manual.

PROJECT COST: $149,943

FUNDING: $ 89,966 by the US EPA
$ 2,500 by GeoSyntec Consultants
$ 57,477 by the Massachusetts Department of Environmental Protection

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 00-16/319

PROJECT TITLE: Lake Wyola TMDL Implementation Project
NPS CATEGORY: Resource Restoration
INVESTIGATOR: EOEA, Division of Conservation and Recreation (formerly Department of Environmental Management)
LOCATION: Connecticut Watershed

DESCRIPTION:

Lake Wyola is a 129-acre recreational lake that supports swimming, boating, and fishing. The watershed of the Lake is 6.8 square miles in the towns of Shutesbury and Wendell. Lake Wyola is a Category 4A water (TMDL for phosphorus has been completed). In addition to phosphorus, Lake Wyola is impaired by organic enrichment/low dissolved oxygen and noxious aquatic plants. A Lake Management Plan was completed in 1997. Both the TMDL and the Lake Management Plan identify nonpoint source problems, and each presents recommendations to address them. Major problems are road management issues, shoreline erosion, septic system management, and invasive aquatic plants.

The goal of this project is to implement selected recommendations from the Lake Wyola Management Plan and Lake Wyola TMDL, and to continue the efforts of the towns of Shutesbury and Wendell, the Lake Wyola Advisory Committee, DCR, and the MDC to protect Lake Wyola and its watershed.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Implementation of residential and roadway BMPs to control erosion and sedimentation;
3. Implementation of a comprehensive septic system management plan;
4. Prevention of the introduction of aquatic invasive species; and
5. Development of effective outreach and education materials to share lessons learned.

PROJECT COST: $ 124,201

FUNDING: $ 74,100 by the US EPA
$ 41,351 by EOEA/DCR
$ 8,750 by the Town of Shutesbury

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 00-17/319

PROJECT TITLE: Local Development of Stormwater Best Management Practices on Residential Property: Overcoming Barriers to Implementation
NPS CATEGORY: Urban Runoff/Outreach and Education
INVESTIGATOR: EOEA: DFWELE/Riverways
LOCATION: Connecticut, South Coastal Watersheds

DESCRIPTION:
Municipalities are faced with many challenges when dealing with stormwater and its impacts on local river and stream systems. In addition to the changes that town government should make to institute best management and good housekeeping practices, the challenge is also to educate and engage citizens to enlist their participation in mitigating stormwater impacts. As we learn more about stormwater and the best ways to manage its impacts, the information must be shared with homeowners. This may involve changing their fundamental assumptions about stormwater and how to manage it.

This project will identify the barriers and motivations to people implementing stormwater Low Impact Development BMPs on their property, and will apply that information to the development of a targeted outreach and education program. Residents will become involved in developing projects so that they begin to reduce the amount of lawn they cultivate, replacing that area with rain gardens, trees, and native plantings. This will reduce the volume of stormwater runoff and the amount of nonpoint source pollution being contributed to stormwater from residential property.

Project tasks include:

1. The formation of focus groups;
2. Design and implementation of a survey to help identify barriers and motivations;
3. Educational workshops and outreach in response to survey feedback;
4. Design and installation of Low Impact Development BMPs; and
5. Project evaluation.

PROJECT COST: $ 109,645

FUNDING: $ 62,090 by the US EPA
$ 34,355 by DFWELE/Riverways
$ 13,200 by Stream Team volunteers

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-13/319

PROJECT TITLE: Lake Buel Implementation and Demonstration Project
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Berkshire Regional Planning Commission
LOCATION: Housatonic Watershed

DESCRIPTION:

Lake Buel is 303d listed for nutrient impairment. A D/F study completed for the lake in 1982 indicates that a large volume of the total annual phosphorus load enters from the northern inlet. Several other subsequent studies have also addressed the impairment problems at Lake Buel, particularly the infestation of non-native aquatic species related to excess nutrients/phosphorus. Many of the recommendations of those studies have already been implemented, including weed harvesting and water quality monitoring.

This project seeks to implement remaining recommendations of the D/F study and the 1997 MADEP Water Quality Assessment. The following tasks will be conducted as part of this project:

1. Monitor water quality and develop a QAPP;
2. Design and install one or more stormwater BMPs at the north cove inlet;
3. Conduct a plant replacement project to establish *Chara*, a native non-nuisance species, as a replacement for the currently dominant milfoil;
4. Design and install one or more stormwater BMPs at the public boat ramp;
5. Develop a septic system maintenance program for the Lake District;
6. Develop drainage standards for subdivisions in watershed communities;
7. Conduct annual weed harvesting; and
8. Develop and conduct an outreach and education program.

PROJECT COST: $164,846

FUNDING: $ 98,346 by the US Environmental Protection Agency
$ 2,000 by the Berkshire Regional Planning Commission
$ 16,000 by the Massachusetts Public Access Board
$ 48,500 by the Lake Buel Restoration Preservation District

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-14/319

PROJECT TITLE: Pontoosuc Lake Watershed Resource Restoration Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Lanesborough
LOCATION: Housatonic River Watershed

DESCRIPTION:

This project builds upon a FFY 99 s319 project (99-03/319) to implement recommendations of a 1999 D/F study. Three other reports have also been completed, each documenting the problems at Pontoosuc Lake. Several recommendations from those studies have been implemented to date. This project will install a stormwater BMP that was designed under the previous grant. In addition, areas of erosion near the BMP locations will be stabilized to prevent sedimentation from entering the lake. The Housatonic Valley Association will conduct a storm drain stenciling and public outreach program to help watershed residents understand the role they can play in reducing NPS, and an ongoing weed harvesting program will be continued.

Activities under this grant that seek to further improve water quality at Pontoosuc Lake include:

1. Installing a stormwater BMP in a priority location;
2. QAPP development and water quality monitoring;
3. Stenciling storm drains;
4. Erosion control;
5. Weed harvesting; and
6. Implementing source controls.

PROJECT COST: $93,883

FUNDING:
$ 55,990 by the US EPA
$ 31,455 by the Town of Lanesborough
$ 750 by the Housatonic Valley Association
$ 5,000 by the Berkshire Regional Planning Commission
$ 688 by the Housatonic EOEA Watershed Team

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-15/319

PROJECT TITLE: Implementing a Stormwater Remediation Strategy at Ashmere Lake
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Town of Hinsdale
LOCATION: Housatonic Watershed

DESCRIPTION:

Ashmere Lake is 303d listed for noxious aquatic plants. Several studies have identified problems at the Lake and have recommended solutions. This project seeks to implement a comprehensive stormwater remediation strategy recommended by studies to prevent sedimentation from gravel roads and prevent the spread of non-native aquatic species. The Town will be supported by the Berkshire Regional Planning Commission in carrying out this project.

Specific tasks include:

1. Develop a QAPP and conduct pre-and post-construction monitoring;

2. Design and install BMPs for road runoff diversion and treatment;

3. Prepare an operation and maintenance plan and program for catch basin maintenance;

4. Conduct an outreach and technology transfer program that includes a storm drain stenciling program, signage at lake access points, and training for municipal officials using the NEMO model;

5. Develop a lake management plan; and

6. Conduct in-lake treatment of non-native invasive aquatic plant species.

PROJECT COST: $175,926

FUNDING: $104,610 by the US EPA
$ 66,020 by the Town of Hinsdale
$ 2,250 from the Berkshire Regional Planning Commission
$ 3,046 from the Housatonic Valley Association

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-16/319

PROJECT TITLE: Plymouth Road Stormwater Treatment System
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Bellingham Department of Public Works
LOCATION: Charles River Watershed

DESCRIPTION:

The Charles River is 303d listed in several locations for multiple pollutants including nutrients, organics, low dissolved oxygen, and pathogens. The Town's Comprehensive Water Resources Management Plan indicates that overland stormwater runoff plays a large role in the degradation of Charles River water quality.

This project will install a stormwater treatment system consisting of a degritter, oil/water separator, and infiltration trenches at the outfall to the Charles River on Plymouth Road. This system is anticipated to reduce the discharge of first flush TSS to zero, and remove 80% of TSS for the 2-year 24-hour storm. The infiltration feature of the BMP will recharge groundwater upstream of the outfall to help maintain flows during dry weather.

Tasks to be completed under this grant include:

1. Develop a QAPP and conduct pre- and post-water quality monitoring;

2. Design and construct a stormwater treatment system; and

3. Develop and implement an outreach and technology transfer program.

PROJECT COST: $79,960

FUNDING: $45,000 by the US EPA
$34,960 by the Town of Bellingham

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-17/319

PROJECT TITLE: North Green Stormwater Management Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Ipswich Department of Public Works
LOCATION: Ipswich River Watershed

DESCRIPTION:

The North Green area is located in downtown Ipswich, adjacent to the Ipswich River. There is no enclosed drainage system in this area, and stormwater runoff sheet-flows into the Ipswich River. Two studies prepared for the Town of Ipswich conclude that urban runoff is the largest contributing factor to stormwater pollution in the Ipswich River.

The goal of this project is to treat stormwater from the North Green area before it enters the river. This will be accomplished by constructing a closed drainage system in the area, consisting of deep sump catch basins, catch basins with outlet hoods, and Stormceptor/Vortechs units. It is anticipated that 80% of TSS will be removed from the stormwater prior to discharge into the River. Matching funds will come from Coastal Pollution Abatement Funds and from local Ch. 90 money, as well as in-kind contributions from the Town.

Tasks for this project include:

1. Develop a QAPP and conduct pre- and post construction water quality monitoring;
2. Field survey of the project area;
3. Environmental permitting;
4. Engineering, design and construction of a closed drainage system; and
5. Outreach and technology transfer.

PROJECT COST: $398,548

FUNDING: $228,000 by the US EPA
$ 50,000 by the Massachusetts Coastal Zone Management
$120,548 by the Town of Ipswich, including $62,000 of Chapter 90 funds

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-18/319

PROJECT TITLE: Lagoon Pond Runoff Renovation Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Oak Bluffs
LOCATION: Islands Watershed

DESCRIPTION:

Lagoon Pond receives direct discharge of untreated stormwater at three locations. Fecal coliform bacteria is a known pollutant carried by this runoff. Nitrogen, phosphorus, and BOD typical of residential stormwater are also suspected to be present. A Lagoon Pond study funded by 604(b) identified this situation as needing corrective action.

The project will infiltrate and thereby treat the first flush of stormwater from the three sources to remove bacteria, BOD, and phosphorus. This will be accomplished by installing catch basins and infiltration systems designed to capture the first flush of stormwater.

Tasks to be completed under this project include:

1. Construction of runoff interception, infiltration and treatments systems at three subwatersheds; sites: Vineyard Avenue, Lagoon Road, and Hudson Avenue; and

2. Outreach and technology transfer through placement of educational signage at each project area and regular press releases.

PROJECT COST: $ 122,745

FUNDING: $ 73,030 by the US EPA
$ 48,966 by the Town of Oak Bluffs
$ 750 by the Dukes Conservation District

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-19/319

PROJECT TITLE: Oldham and Furnace Pond Stormwater Treatment
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Pembroke
LOCATION: South Coastal Watershed

DESCRIPTION:

A 1993 D/F study found high levels of nutrients and invasive aquatic vegetation in both Oldham Pond and Furnace Pond. Stormwater impacts were also noted in the study. A subsequent DEM study made specific recommendations for stormwater BMPs.

This project will implement structural and non-structural BMPs to prevent the key pollutant, phosphorus, from entering the ponds. This will be done by converting twenty-nine catch basins to leaching catch basins; cleaning, widening, and revegetating a drainage ditch; and strengthening local controls on sedimentation and erosion.

Tasks to be completed under this grant include:

1. Design, permitting and construction of stormwater best management practices at twenty-nine locations;

2. Modification of town sedimentation and erosion control bylaws and regulations;

3. A DEP- and EPA-approved QAPP for monitoring the effectiveness of the BMPs; and

4. Development and distribution of educational brochures targeted to watershed residents about lawn care and fertilizer use, pet waste, and waterfowl management. Letters will be sent to lawn care professional encouraging conservative application of fertilizers in the watershed.

PROJECT COST: $194,448

FUNDING: $116,669 by the US EPA
$ 77,779 by the Town of Pembroke

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-20/319

PROJECT TITLE: Lake Attitash Stormwater Treatment Program
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Town of Amesbury
LOCATION: Merrimack Watershed

DESCRIPTION:

Lake Attitash is a 360-acre natural lake used for recreation. Water quality in the Lake has been a problem for several years, evidenced by algae and weed growth as well as beach closures. Previous studies have indicated that stormwater is a significant contributor to the water quality problems.

Based on recommendations from a DEM-funded study, this project focuses on implementation of structural and non-structural stormwater BMPs in one of the largest direct drainage contribution areas of Lake Attitash. Three direct discharges will be treated by one structural BMP, consisting of a series of baffle tanks designed to reduce velocity and trap sediment.

Tasks to be performed include:

1. DEP and EPA approved QAPP to determine the effectiveness of the BMPs;

2. Design, permitting and installation of stormwater best management practices at three direct discharges into the Lake; and

3. A half-day seminar to present project results to watershed residents, and others.

PROJECT COST: $163,675

FUNDING: $98,205 by the US EPA
$65,470 by the Town of Amesbury

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-21/319

PROJECT TITLE: Lake Quinsigamond and Lake Ripple Restoration Project
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Lake Quinsigamond Commission
LOCATION: Blackstone River Watershed

DESCRIPTION:

Water quality in Lake Quinsigamond and Lake Ripple has degraded due to increased urban runoff and nutrient loading, as identified in the TMDL for Lake Quinsigamond and a 1987 D/F study. Lake Quinsigamond is 303d-listed for nuisance aquatic plants and organic enrichment/low dissolved oxygen. Lake Ripple suffers from high salt and sand runoff from Routes 122 and 140. No TMDL has been done for Lake Ripple, but the grantee feels it would be unlikely to meet clean water standards.

The project will implement structural and nonstructural BMPs to address NPS pollution, primarily phosphorus, in the Lake Quinsigamond watershed, and sediment loading in Lake Ripple. This project is identified as a priority in the Blackstone River Basin FY 2001 EOEA Watershed Team Workplan.

Specific tasks include

1. Water quality sampling;
2. Design and installation of a sediment removal BMP for Lake Ripple;
3. Stream bank restoration in the Quinsigamond River;
4. Mapping of storm drains into Lake Quinsigamond and Flint Pond;
5. Installation of a phosphorus and sediment removal BMP for Lake Quinsigamond; and
6. Removal of sediment under Route 20 at Half Moon Bay.

PROJECT COST: $405,000

FUNDING:

$243,000 by the US EPA	$ 3,000 Grafton DPW
$ 67,500 Shrewsbury Engineering Dept.	$ 13,800 Town of Shrewsbury
$ 25,740 Graves Engineering/Town of Grafton	$ 24,800 MA Environmental Trust
$ 4,360 Lake Quinsigamond Commission	$ 2,000 Shrewsbury Health Dept
$ 3,000 Shrewsbury Highway Dept.	$ 6,000 Students/Grafton H.S. and Shrewsbury H.S.

DURATION: 2002 - 2005

Note: This project did not go forward

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-22/319

PROJECT TITLE: Stormwater Management Plan at the Millyard Marketplace
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Sturbridge
LOCATION: Quinebaug Watershed

DESCRIPTION:

Impervious parking area around the Millyard Marketplace, which is adjacent to the Quinebaug River, causes flash flooding during storm events. In addition, stormwater runoff from the parking lot contributes non-point source pollution directly into the River. This project focuses on implementing BMPs that will abate the flash flooding and improve the water quality of discharge at the Marketplace.

BMPs to be implemented include construction of 250 linear feet of low-gradient trough around portions of the parking area that will detain sediment, and 440 linear feet of low-gradient, serpentine grassed waterway that will remove fines and nutrients. A vortex-type BMP will be installed to treat stormwater flowing from the storm sewer at Route 20, and a concrete sediment basin will be installed at the Route 20 outlet pipe. Two new catch basins will be installed to better control the Route 20 stormwater. A new public park will be created that will include an educational kiosk. This is a priority project in the FY 2002 French/Quinebaug EOEA Watershed Team Plan.

Tasks to be completed under this grant include:

1. Planting swales and filter strips to slow runoff into the river;

2. Removal and relocation of a parking lot and widening of the existing buffer;

3. Installation of improved drainage from Route 20;

4. Renovation of an existing detention basin to improve volume and filtration capacity; and

5. Creation of a new public park with education kiosk.

PROJECT COST: $ 86,660

FUNDING: $ 51,660 by the US EPA
$ 35,000 by the Massachusetts Turnpike Authority

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-23/319

PROJECT TITLE: Demonstration of Innovative Stormwater Management Retrofit Systems
NPS CATEGORY: Urban runoff
INVESTIGATOR: Center for Urban Watershed Renewal
LOCATION: North Coastal Watershed

DESCRIPTION:

The project seeks to demonstrate the feasibility of retrofitting existing urbanized landscapes with best management systems that will increase infiltration rates, provide filtering mechanisms for stormwater runoff, and improve the water quality of runoff. The project will install a volume dependent stormwater retention planter, a vegetated infiltration system, and a vegetated roof at two sites on the North River in Salem.

Tasks to be completed include:

1. Prepare a final design for the stormwater retrofitting systems;

2. Site preparation for installation of stormwater management retrofitting systems;

3. Construction of stormwater management retrofitting systems, including volume-dependent stormwater retention planters; vegetated infiltration systems; structural support for vegetated roofs; and vegetated roofs;

4. Preparation and implementation of QAPP for monitoring pre- and post- construction effectiveness of BMPs; and

5. Technology transfer including production of a documentary video, open houses, seminar and training session, and final report relating project details.

PROJECT COST: $175,370

FUNDING: $ 85,637 by the US EPA
$ 89,733 by The Bioengineering Group, Inc.

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-24/319

PROJECT TITLE: Storm Water System Maintenance and Residuals Waste Handling
NPS CATEGORY: Urban Runoff
INVESTIGATOR: City of Quincy
LOCATION: Boston Harbor Watershed

DESCRIPTION:

Storm water runoff is negatively impacting the natural and recreational resources at Wollaston Beach. Chronic bacteria problems cause frequent swimming advisories and have a negative impact on surrounding marsh areas. Stormwater from eight outfalls discharges directly onto Wollaston Beach. The City has developed a five-year capital plan to restore water quality at Wollaston Beach. The plan includes eliminating sources of pollution by upgrading sewer and storm drains.

The project seeks to obtain a Beneficial Use Determination for catch basin residuals. Disposal of catch basin residuals is a statewide problem that will grow more serious with the onset of Phase II Stormwater requirements, and development of a BUD is seen as the first step toward solving the problem on a statewide basis. Anticipated results include development of guidelines for other cities and towns seeking to use a similar strategy for disposal of this material. Ideally, the quality of catch basin residuals can be related to land use surrounding the catch basin, enabling development of a set of standard land use-based protocols.

Tasks under this project include:

1. Assessment of city stormwater collection procedures including development and implementation of a DEP- and EPA-approved QAPP;

2. Development of an operation and maintenance plan for the existing collection system;

3. Construction of a processing area for catch basin residuals; and

4. Development of additional Beneficial Use Determinations based on collected data.

PROJECT COST: $ 143,389

FUNDING: $ 85,535 by the US EPA
$ 57,854 by the City of Quincy

DURATION: 2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-25/319

PROJECT TITLE:	Operation and Maintenance of the Massachusetts Alternative Septic System Test Center
NPS CATEGORY:	Land Disposal
INVESTIGATOR:	Barnstable County Dept. of Health and the Environment
LOCATION:	Statewide

DESCRIPTION:

This project will continue to operate and maintain the very successful Massachusetts Alternative Septic System Test Center located at the Otis Air National Guard Base on Cape Cod. MASSTC monitors the contaminant removal capabilities of conventional and alternative wastewater treatment systems. This provides a body of verified, comparable data about the effectiveness of these systems, which is disseminated to state regulators and local officials. With this project, the MASSTC seeks to continue its current operation while expanding the program to accept and test as many other new technologies as possible. In addition, the MASSTC is open as a training and educational facility to various groups who wish to observe first-hand the systems that are undergoing evaluation.

Tasks to be completed include:

1. Conducting regular facility operations;

2. Solicitation, testing, research, and development of new onsite technologies;

3. Data analysis and synthesis into report format;

4. Tours and educational outreach for Test Center visitors, including regulators, municipal officials, contractors, realtors, engineers, designers, and others; and

5. General outreach and education including presentations, workshops, and the publication of articles.

PROJECT COST:	$250,273
FUNDING:	$150,164 by the US EPA $100,109 from Vendors, through the ETV program
DURATION:	2002 - 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NONPOINT SOURCE PROJECT 01-26/319

PROJECT TITLE: Massachusetts Estuaries Project
INVESTIGATOR: University of Massachusetts-Dartmouth
LOCATION: Southeastern Coastal Massachusetts

DESCRIPTION: This project will begin to implement the Linked Watershed Embayment Model Approach in 89 coastal estuaries in Southeastern Massachusetts for TMDL development.

Specific tasks include:

1. Develop a Quality Assurance Project Plan;
2. Collect data and implement the Linked watershed-Embayment Approach in 20 embayments;
3. Provide technical assistance and training for municipalities and volunteer groups;
4. Conduct Linked Model training;
5. Conduct public participation; and
6. Report results.

PROJECT COST: $ 2,172,000

FUNDING: $ 706,187 from US EPA
$ 198,813 from state and local funds
$1,267,000 other non-federal match

DURATION: 2002-2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 01-27/319

PROJECT TITLE: Beaver Brook Culvert Rehabilitation and Improvements to Beaver Brook Park
NPS CATEGORY: Resource Restoration
INVESTIGATOR: City of Worcester
LOCATION: Blackstone Watershed

DESCRIPTION:

This project will offset construction costs related to the stream restoration (daylighting) of approximately 1,175 linear feet of Beaver Brook within Beaver Brook Park. This is part of a larger project that will improve recreational fields within the park. Beaver Brook Park is located within a 100-year flood plain associated with Beaver Brook, which is currently culverted. During storm events, the water surface within a failed portion of the existing culvert overflows through the lower sidewalls adjacent to the playing fields, resulting in flooding. The functional value of the water resource is extremely limited due to its culverted state, and it primarily serves as a conduit for water flow. Beaver Brook is listed as a Category 5 water, impaired by habitat alteration, pathogens, and objectionable deposits.

The goal is to improve water quality by exposing the stream to air and sunlight. The project will result in approximately 1,175 linear feet of open channel and new bank, with significantly improved wildlife habitat values.

Stream daylighting will include excavation and removal of approximately 1,175 linear feet of culvert to create an open channel. The new channel will be 16 feet wide at its base and will be constructed with stone and habitat structures to encourage the development of meanders. The wetland shelf and upland side slope will be vegetated with native plants appropriate to the newly created habitat. The stream daylighting and related reconstruction of the floodplain will result in flood mitigation and improved habitat and water quality as follows:

- The banks and open channel will allow for free groundwater discharge to the brook, thereby reducing the water temperature and allowing more dissolved oxygen in the water
- Dissolved oxygen will also be increased by exposure to wind and turbulence from cascading over instream stones
- The banks will be partially vegetated, thereby improving slope stability and wildlife habitat.
- Vegetation on the banks will shade and cool the water
- Vegetated banks will also improve water quality by providing a buffer to slow and treat NPS pollutants carried by runoff

The project will be evaluated through development and implementation of a DEP- and EPA-approved QAPP.

PROJECT COST: $ 433,334

FUNDING: $ 260,000 by the U.S. EPA
$ 173,334 by the City of Worcester

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-01/319

PROJECT TITLE: Indian Lake Watershed Resource Restoration
NPS CATEGORY: Urban Runoff
INVESTIGATOR: City of Worcester Department of Public Works
LOCATION: Blackstone Watershed

DESCRIPTION:

Indian Lake is the largest body of water located completely within the City of Worcester. The Lake's 2000-acre watershed area is heavily urbanized. Over the past 50 years, development within the Mill Brook watershed has increased dramatically, which has caused water quality problems. Sedimentation and high phosphorus loads have led to eutrophication of the Lake with 303d listed impairment of water quality from low dissolved oxygen, nuisance aquatic plants, and organic enrichment.

This project is part of a comprehensive effort to improve water quality and recreational opportunities at Indian Lake and in the surrounding watershed by treating polluted urban stormwater runoff, which results in sedimentation and nutrient inputs to the Lake and its tributaries. Structural Best Management Practices (BMPs) will be installed to remove sediment and nutrients from stormwater entering the Lake, while public outreach and education will help to reduce watershed contaminants at the source.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Design and installation of a series of structural Best Management Practices (BMPs) to prevent contaminated runoff from reaching the Lake;
4. Conducting minor repairs to the impoundment dam;
5. Implementation of a long-term weed control plan;
6. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
7. Outreach and education to stakeholders.

PROJECT COST: $ 437,900

FUNDING:
$ 253,000 by the US EPA
$ 3,000 City of Worcester Department of Public Health
$ 103,060 City of Worcester Department of Public Works
$ 6,400 City of Worcester Parks, Recreation and Cemetery Department
$ 57,290 Indian Lake Watershed Association
$ 1,500 Morgan Construction/Norton Co.
$ 1,000 Regional Environmental Council
$ 5,000 Tighe and Bond
$ 5,150 Worcester Polytechnic Institute

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-02/319

PROJECT TITLE: Wall Street Highway Yard Stormwater Improvements Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: City of Attleboro
LOCATION: Ten Mile Watershed

DESCRIPTION:

The City of Attleboro's Wall Street Highway Yard is a 6.6-acre parcel on the banks of the Ten Mile River. There is currently no treatment or buffer for stormwater runoff from the highway facility. The drainage system from the highway yard discharges directly into the River from two outfalls and two overland flow locations. Documented water quality data for similar facilities shows that oil and grease, automotive fluids, sediment, metals, nutrients, and toxic chemicals are among the nonpoint source pollutants likely to be found in runoff from the site. The site directly abuts the Ten Mile River, which is 303d listed for toxicity, metals, nutrients, organic enrichment/low dissolved oxygen, and pathogens.

The goal of this project is to improve water quality and the physical and biological health of the riparian corridor at this site by implementing structural and non-structural Best Management Practices to reduce non-point source pollution entering the Ten Mile River from this location.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Work at several locations to implement installation of six new storm drain inlet catch basins;
4. Construction of a bioretention facility and swale;
5. Improved overland drainage into infiltration systems;
6. Installation of vegetated riparian buffers;
7. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
8. Education of facility users about BMPs to be used on-site.

PROJECT COST: $260,825

FUNDING: $155,975 by the US EPA
$104,850 by the City of Attleboro

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-03/319

PROJECT TITLE: Stormwater Management on the Middle Pond of the Congamond Lakes
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Pioneer Valley Planning Commission
LOCATION: Westfield Watershed

DESCRIPTION:

The Congamond Lakes are three interconnected ponds: North, Middle, and South Ponds. Together, the three ponds are approximately three miles long and up to one-third of a mile wide, with a total surface area of 465 acres. The Congamond Lakes are 303d listed for noxious aquatic plants. The Lakes are heavily used for recreational purposes, and the eutrophication of the Lakes has become a deterrent to recreation as well as a potential health hazard.

The purpose of this project is to address the quality of street runoff entering Middle Pond of the Congamond Lakes from the Berkshire Avenue Sub-basin drainage area. A diagnostic/feasibility study conducted in 1983 recommended stormwater management measures, including structural Best Management Practices as well as watershed controls for source reduction of pollutants.

Project tasks include

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Design and construction of a detention basin with a water quality swale;
4. Removal of accumulated in-lake sediment;
5. Development of stormwater control bylaws;
6. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
7. On-site technical assistance for watershed residents.

PROJECT COST: $ 155,435

FUNDING: $ 92,935 by the US EPA
$ 62,500 by the Town of Southwick

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-04/319

PROJECT TITLE: Implementing Nonpoint Source BMPs at Richmond Pond
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Richmond/Richmond Pond Association
LOCATION: Housatonic Watershed

DESCRIPTION:

Richmond Pond is a 218-acre water body that is listed as impaired by noxious aquatic plants (invasives) in the 1997 DEP water quality assessment report. The Pond is heavily used for recreation by residents and by several camps. The heavy weed growth impairs swimming and boating on the Pond. Results of a 1990 Diagnostic/Feasibility study indicate that the installation of structural and non-structural dirt road best management practices, installation of buffers along shoreline and tributary corridors, and installation of detention basins at tributary inlets will improve water quality in Richmond Pond, thus helping to control weed growth.

Project goals include implementation of watershed and in-lake BMPs to mitigate NPS, restoration and protection of recreational uses and habitat value, and implementation of D/F recommendations for the elimination and control of invasive aquatics. This project will also implement recommendations from a stormwater assessment report, 99-10/MWI, to address stormwater and erosion around the lake.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Design and install a detention pond;
4. Drainage improvements;
5. Installation of vegetative buffers;
6. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
7. Education and outreach work, which will feature brochures and training workshops for watershed residents about buffer design and installation.

PROJECT COST: $ 92,000

FUNDING: $ 55,200 by the US EPA
$ 36,800 by the Town of Richmond

DURATION: 2003 – 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-05/319

PROJECT TITLE: Neponset River Watershed Bacteria TMDL Implementation Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Neponset River Watershed Association
LOCATION: Boston Harbor/Neponset Watershed

DESCRIPTION:

Much of the Neponset River and many of its tributaries fall short of their designated uses for primary and secondary contact recreation due to bacterial pollution. Many point sources of bacterial pollution have been identified and addressed by DEP and NepRWA in the past decade, but mainstem bacteria problems persist. Many tributaries are also included on the 303 d list for other impairments including sedimentation, toxicity, aesthetics, habitat degradation, and temperature. A draft TMDL has been developed for bacteria in the Neponset River. This project seeks to comprehensively implement the recommendations of the draft TMDL, with the goal of abating the worst sources of NPS bacterial pollution and restoring designated uses of the Neponset River.

The project focuses on four major strategies: managing residential stormwater runoff, ensuring proper maintenance of septic systems, detailing sources of NPS bacteria as called for in the TMDL, and a strong outreach and technology transfer component. Project success will be gauged through water quality monitoring, and ultimately by the number of stream segments restored to their designated uses.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-implementation water quality monitoring to document project results;
3. Design and installation of structural BMPs (enhanced wetland, phyto-enhanced buffer, bioretention cells) on Pine Tree Brook;
4. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
5. Outreach and education about watershed BMPs and proper septic maintenance.

PROJECT COST: $ 472,152

FUNDING: $ 283,005 by the US EPA
$ 40,577 by the Neponset River Watershed Association
$ 116,654 by the Town of Milton
$ 31,915 by the Town of Walpole

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-06/319

PROJECT TITLE: Head of Westport Stormwater Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Westport
LOCATION: Buzzards Bay Watershed

DESCRIPTION:

In the Town of Westport, the Westport River has 35 miles of shoreline and drains approximately 85% of the town's land area. The river supports an extensive and productive estuarine habitat including over 1000 acres of salt marsh vegetation. Within the estuary, there are approximately 3000 acres of shellfish beds. Two branches of the River, the East Branch and the West Branch, converge at Westport Point to form a single discharge into Buzzards Bay. The tidal component of the East Branch extends from the area known as the Head of Westport to the mouth of the river. The watershed of the East Branch is the larger of the two branches and consists primarily of agricultural and residential land use in the lower region, and forest in the upper part. Currently, the East Branch of the Westport River from Lake Noquochoke to the West branch is 303d listed for pathogens. This bacterial contamination threatens the health of the shellfish beds located within the watershed, causing restrictions on harvesting.

The goal of the project is to improve water quality in the East Branch by reducing nonpoint source pollution at the Head of Westport through implementation of a combination of structural stormwater control Best Management Practices to remove bacteria from the first flush of stormwater, and public outreach and education to watershed stakeholders.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Construction of a sediment forebay for pretreatment of stormwater runoff before discharge into two retention ponds;
4. Construction of a sediment basin to discharge into a constructed wetland;
5. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
6. Outreach and education to watershed stakeholders in collaboration with the Buzzards Bay Program.

PROJECT COST: $ 444,144

FUNDING: $ 264,332 by the US EPA
$ 160,441 by the Town of Westport
$ 19,371 by the Westport River Watershed Alliance

DURATION: 2003 – 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-07/319

PROJECT TITLE: Lake Singletary Storm Drain Retrofit Program
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Millbury
LOCATION: Blackstone Watershed

DESCRIPTION:

Lake Singletary lies in the towns of Millbury and Sutton. The Lake shows signs of eutrophication, including periodic algae blooms, reduced transparency, and infestation of nuisance aquatic plants. The degraded condition of the Lake impairs recreational and aesthetic values of Lake Singletary. A Diagnostic/Feasibility study and a lake management plan have been completed, with a recommendation that phosphorus loads to the lake must be reduced to slow the eutrophication process. Management options proposed in the lake management plan include stormwater management to reduce sedimentation and nutrient loading.

The Town of Millbury will coordinate with the Town of Sutton and the Lake Singletary Watershed Association to implement BMPs by retrofitting 20 existing stormwater structures and enhancing three wet detention swales and catch basins. Outreach and education will be undertaken by the LSWA, who will carry out such projects as storm drain stenciling, maintaining a web site, and producing a video for local cable access television.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Retrofit of 20 existing catch basins;
4. Repair and enhancement of three wet detention swales and catchment areas;
5. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
6. Outreach and education to watershed stakeholders about nonpoint source pollution and water quality issues.

PROJECT COST: $ 134,329

FUNDING: $ 70,907 by the US EPA
$ 53,022 by the Towns of Millbury and Sutton
$ 10,000 by the Lake Singletary Watershed Association
$ 400 by the Boy Scouts of America

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-08/319

PROJECT TITLE: Hammond Pond Stormwater Management Plan Implementation Phase I
NPS CATEGORY: Urban Runoff
INVESTIGATOR: City of Newton
LOCATION: Charles Watershed

DESCRIPTION:

Hammond Pond is a shallow 22-acre freshwater kettle pond. Its watershed is approximately 167 acres, located in Newton and Brookline. Dominant land use of the watershed (38%, 64 acres) is commercial. The Pond is widely used for recreational and aesthetic purposes including catch and release fishing, bird watching, and canoeing. Hammond Pond is experiencing accelerated eutrophication and bacterial contamination, and is 303d listed for noxious aquatic plants. 71% of the Pond's inflow is from rainwater. Stormwater runoff and direct contamination by large numbers of waterfowl are regarded as the primary causes of the impairments.

This project proposes implementation of several high-priority projects that are recommended in an overall master plan. The goal is to treat the greatest amount of runoff possible, with the greatest quantifiable pollutant load removal. The proximity of the site to a very large shopping mall, coupled with the heavy recreational use of the Pond, will maximize the opportunity for outreach and education to stakeholders, as well as the visibility and technology transfer of the Best Management Practices that will be used.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Design, permitting, and installation of Phase I BMPs (bioretention facilities, sand filter, Vortechs unit, buffers, forebay, paving modification)
4. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
5. Outreach and education to stakeholders about waterfowl feeding and other NPS problems.

PROJECT COST: $ 249,257

FUNDING:
$ 149,500 by the US EPA
$ 74,075 by the City of Newton
$ 12,160 by the Friends of Hammond Pond
$ 500 by the Chestnut Hill Village Alliance
$ 1,000 by the Charles River Neighborhood Foundation
$ 6,022 by the Charles River Watershed Association
$ 6,000 by the Chestnut Hill Garden Club

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-09/319

PROJECT TITLE: Stormwater Remediation for Plymouth Harbor and Plymouth Bay
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Plymouth Department of Public Works/Engineering
LOCATION: South Coastal Watershed

DESCRIPTION:

Plymouth Harbor is listed on the 303(d) list of impaired waters due to bacterial contamination from stormwater runoff. This bacterial contamination has caused beach closures in the Harbor and has contributed to the prohibition of shellfishing in Plymouth Harbor and Plymouth Bay. The Town of Plymouth is undertaking a comprehensive, three-phase program to address bacterial pollution in the area. The first two phases, which are fully funded and underway, are the expansion and improvement of the Plymouth Wastewater Treatment Plant and a new Plymouth Harbor Pump-Out Program. The Pump-Out Program provides a pump-out boat that services recreational vessels in the Harbor, and provides a shoreside pump-out facility that can accommodate larger commercial boats and the residential fleet.

This project will fund and implement the third phase of the Town's comprehensive clean-up program. It addresses the impacts of non-point source pollution due to stormwater runoff from the watershed. A substantial amount of study has already been completed by the Town to determine the most appropriate approach to this phase of the work. Three Best Management Practices (BMPs) will be designed and installed in locations that have been selected to provide the maximum amount of remediation. These BMPs will be infiltration stormwater treatment devices for removal of bacteria. Pre-and post-implementation water quality monitoring will be conducted in accordance with a Quality Assurance Project Plan in order to measure and document project success. Development and implementation of an Operation and Maintenance Plan will ensure that the BMPs continue to function properly. The Town will promote outreach and education about this project through a variety of activities including press releases, local events, and through the Town's web site.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Final design and installation of stormwater BMPs in three locations;
4. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
5. Outreach and education about the project.

PROJECT COST: $ 435,000

FUNDING: $ 249,000 by the US EPA
$ 186,000 by Town of Plymouth

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-10/319

PROJECT TITLE: Implementation of TMDL Recommendations at Lake Boon
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Lake Boon Commission (Town of Stow)
LOCATION: SuAsCo Watershed

DESCRIPTION:

Lake Boon is a 163-acre great pond located in the towns of Stow and Hudson. The Town of Stow will administer this contract on behalf of the Towns of Stow and Hudson and the Lake Boon Commission. The 1000-acre watershed is a mix of forest and residential development, with many lakefront cottages that been converted into year-round homes. The Lake is divided into four basins, the first and largest of which is largely natural. The remaining three basins are man-made as a result of damming of the outlet pond in the mid 1800's. The second, third and fourth basins are overgrown with invasive weeds that have spread considerably in the last decade. Lake Boon is 303d listed for nuisance aquatic plants, and a TMDL for phosphorus is in the final draft stages.

Activities proposed have been recommended in at least one of three studies that have been completed for the Lake. The project goal is to improve water quality in the Lake through installation of structural stormwater treatment devices, and to reduce non-point source pollution at the source by encouraging good practices among watershed residents and stakeholders. An aquatic plant replacement program will also be conducted.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs;
4. Conducting a lake watershed survey;
5. Installation of 26 stormwater BMPs (leaching catch basins);
6. Development and implementation of a septic pumping reminder program;
7. A plant replacement program; and
8. Educational brochures and outreach to stakeholders.

PROJECT COST: $ 143,214

FUNDING: $ 84,692 by the US EPA
$ 49,322 by the Towns of Stow and Hudson
$ 1,200 from the Lake Boon Commission
$ 8,000 from the Lake Boon Improvement Association

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 02-11/319

PROJECT TITLE: Wachusett Mountain NPS Pollution Management
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Wachusett Mountain Associates (WMA)
LOCATION: Nashua Watershed

DESCRIPTION:

Wachusett Mountain State Reservation is home to a number of water resources including intermittent and perennial streams, ponds, vernal pools, and wetlands. The condition of Wyman Pond, a 200-acre lake in the 4C category of the Integrated List ("impairments not caused by pollutants"), has been documented over two decades, including a 1983 Diagnostic/Feasibility Study and a 2000 stream and stormwater monitoring and evaluation program. Excessive sediment (TSS) has been identified as one of the main water quality concerns for Wyman Pond.
This project will build upon an existing stormwater management system by installing a number of BMPs that will significantly reduce or eliminate future degradation of the receiving waters and downstream resource areas, as well as provide an opportunity to educate a large number of guests that visit this Wachusett Mountain Ski Area. Runoff from a portion of the five-acre parking lot receives minimal treatment before it is discharged to a resource area. In order to bring the stormwater management system into compliance with Massachusetts Stormwater Standards, WMA proposes to install a series of BMPs that will reduce TSS below the recommended 80% levels as well as increase groundwater recharge at the site. BMPs to be installed include a grit separator, stormwater filtration, and an infiltration gallery.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan;
2. Installation of a series of structural BMPs to control and treat stormwater flow;
3. Development and implementation of an Operation and Maintenance Plan;
4. Construction of educational kiosks for outreach and education about NPS issues; and
5. Watershed BMPs to reduce the amount of sediment entering the system.

PROJECT COST: $ 161,000

FUNDING: $ 97,000 by the US EPA
$ 64,000 by Wachusett Mountain Associates

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-01/319

PROJECT TITLE: Operation and Maintenance of the Massachusetts Alternative Septic System Test Center
NPS CATEGORY: Land Disposal
INVESTIGATOR: Barnstable County Dept. of Health and the Environment
LOCATION: Statewide

DESCRIPTION:

This project will continue to operate and maintain the very successful Massachusetts Alternative Septic System Test Center located at the Otis Air National Guard Base on Cape Cod. MASSTC monitors the contaminant removal capabilities of conventional and alternative wastewater treatment systems. This provides a body of verified, comparable data about the effectiveness of these systems, which is disseminated to state regulators and local officials. With this project, the MASSTC seeks to continue its current operation while expanding the program to accept and test as many other new technologies as possible. In addition, the MASSTC is open as a training and educational facility to various groups who wish to observe first-hand the systems that are undergoing evaluation.

This continuing project endeavors to support the state's developing TMDL program by providing environmental decision makers with the tools by which the goals of the TMDL program can be achieved, especially where wastewater is a major source of pollutant loading. The project proposes to continue the ongoing work of the MASSTC. Tasks include conducting facility operations, synthesizing data derived from testing of new systems, reporting on test results, and providing outreach and education at the test center and through published reports and articles.

Tasks to be completed include:

1. Conducting regular facility operations;
2. Solicitation, testing, research, and development of new onsite technologies;
3. Data analysis and synthesis into report format;
4. Tours and educational outreach for Test Center visitors, including regulators, municipal officials, contractors, realtors, engineers, designers, and others; and
5. General outreach and education including presentations, workshops, and the publication of articles.

PROJECT COST: $ 206,731

FUNDING: $ 124,005 by the US EPA
$ 34,226 by the Barnstable County Dept. of Health and the Environment
$ 48,500 by technology vendors (ETV program of the US EPA)

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-02/319

PROJECT TITLE: Comparison Of Virus Removal In Aggregate Free Chamber Leaching Systems vs. Aggregate Laden Trenches
NPS CATEGORY: Land Disposal
INVESTIGATOR: Barnstable County Dept. of Health and the Environment
LOCATION: Statewide

DESCRIPTION:

In recent years, the Commonwealth of Massachusetts has been petitioned by vendors of chamber-type leaching structures to reduce the required area for soil absorption when their product is used without aggregate. Regulators at the state level are concerned that the higher loading rates of such a system might reduce the virus removal capability as compared to standard aggregate-laden trenches.

The goal of the proposed project is to determine whether aggregate-free leaching systems challenged with the requested loading rates provide the same degree of pathogen removal as aggregate-laden leaching trenches loaded at the rates prescribed in Title 5.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Design and construction of test systems;
3. Monitoring to document project results; and
4. Technology transfer of results through publication of articles, presentation, and two workshops.

PROJECT COST: $ 39,159

FUNDING: $ 23,359 by the US EPA
$ 15,800 to be determined

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-03/319

PROJECT TITLE: South Coastal Inter-Municipal Water Quality Improvement Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Pembroke
LOCATION: South Coastal, Taunton Watersheds

DESCRIPTION:

This project is part of a multi-community effort to work collectively in reducing stormwater contaminants from entering fifteen 303d-listed waterbodies in the towns of Pembroke, Hanover, and Hanson. Pembroke is the lead applicant for this cooperative proposal. In 2001, the towns of Pembroke and Hanson jointly purchased a weed harvester, and in 2000 the same towns jointly applied for and received a CZM/CPR grant to install several BMPs for the Indian Head River.

The principal activity of this project will be to purchase and share a Johnston 605 PM-10 vacuum street sweeper to remove roadside sediment, nutrients, toxics, and other pollutants that currently enter stormwater infrastructure. A strategic Pavement Cleaning program will be developed to target the 15 303d-listed waterbodies within the boundaries of the three towns. Storm drain markers, signage, and an intensive public education and outreach program will also be implemented under this proposal.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Purchase and operation of the Johnston 605 PM-10 Vacuum Sweeper;
3. Finalization of an intermunicipal agreement for shared operation of the equipment;
4. Development and implementation of a Pavement Cleaning Program to ensure maximum efficiency of the program;
5. Development and implementation of a public outreach and education program For stakeholders;
6. Water quality monitoring to document project results; and
7. Technology transfer with regard to the effectiveness of the pavement cleaning program.

PROJECT COST: $ 356,910

FUNDING: $ 211,212 by the US EPA
$ 186,000 by the Towns of Pembroke, Hanover, and Hanson

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-04/319

PROJECT TITLE: Dorothy Pond Perimeter and Local Watershed Stormwater Management/Remediation Proposal
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Millbury
LOCATION: Blackstone Watershed

DESCRIPTION:

Dorothy Pond is an enhanced great pond, approximately 160 acres in size. It is fed by Broadmeadow Brook, with a watershed in the northeast quadrant of Millbury. The Pond is adversely impacted by urban and residential development on the shoreline and in its watershed. Nutrients and sedimentation have caused the Pond to become eutrophic with significant annual growth of nuisance aquatic vegetation. Water quality sampling has demonstrated that nutrient loads and siltation increase significantly during storm events.

The goal of the project is to improve the management of stormwater runoff and thereby reduce the nutrient loading, turbidity, and siltation/sedimentation caused by stormwater entering the Pond. A Diagnostic/Feasibility study and a TMDL analysis for phosphorus have been completed for the Pond, and project activities follow the recommendations of those reports. Tasks include design and installation of twenty Stormceptor-type units to be installed at every storm drain outlet entering Dorothy Pond and other Millbury outlets that empty into Broadmeadow Brook, and outreach/education through activities of the Dorothy Pond Watershed Association, Massachusetts Audubon Society, and others.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Pre- and post-construction water quality monitoring to document project results;
3. Design and installation of twenty Stormceptor or similar units;
4. Development and implementation of a long term operation and maintenance plan to ensure continued effectiveness of the BMPs; and
5. Public outreach and education for watershed stakeholders.

PROJECT COST: $ 189,000

FUNDING: $ 113,400 by the US EPA
$ 75,600 by Town of Millbury

DURATION: 2003 - 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-05/319

PROJECT TITLE: Bare Hill Pond Noxious Aquatic Plant Reduction
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Town of Harvard
LOCATION: Nashua

DESCRIPTION:

Bare Hill Pond in Harvard, Massachusetts is a 321- acre municipally managed pond in the Nashua basin. The watershed is moderately developed, although it maintains the rural nature of the community due to largely forested environs. The pond has elevated nutrient levels and suffers from extensive growths of invasive plants including variable milfoil, water chestnut, water lilies, fanwort, smartweed, and pondweed. The excessive weed growth is attributable to shallow water depth, nutrient rich bottom sediments, and sustained nutrient input from the watershed.

This project will address recommendations made in the Bare Hill Pond TMDL by reducing the biomass of noxious aquatic plants through monitored winter drawdowns and harvesting, and will reduce the levels of phosphorus through outreach and education. It proposes to provide an interesting tool that may be useful to other waterbodies in the Commonwealth. The town routinely addresses invasive aquatic species though an annual drawdown. The drawdown is limited to a four-foot depth because of the physical constraints of the dam. This project proposes to develop a floating mounted pump that will enable the grantees to implement a deeper drawdown, thus enabling better weed control.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan;
2. Develop a mobile pumping station to facilitate drawdowns;
3. Drawdowns, weed harvesting and manual weed pulling to reduce macrophytes;
4. A NPS survey of the lake watershed; and
5. Development of a community outreach and education program to improve watershed management and reduce phosphorus inputs.

PROJECT COST: $ 329,850

FUNDING: $ 195,000 by the US EPA
$ 134,850 by the Town of Harvard and its Bare Hill Pond Watershed Management Committee

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-06/319

PROJECT TITLE: Pittsfield Water Supply: Stormwater Remediation Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: City of Pittsfield
LOCATION: Housatonic Watershed

DESCRIPTION:

The City of Pittsfield maintains and operates six surface water supply sources and two water treatment facilities for their drinking water supply. Both the Cleveland and the Sackett Brook reservoirs are threatened by stormwater runoff from adjacent roadways. At Cleveland Reservoir, approximately 4462 feet of roadway lies within Zone A, some of which is unpaved and all of which directs sheet flow directly into the reservoir. At Sackett Brook Reservoir, two roads hug the shoreline for 3103 feet within the Zone A. The eastern side of the roadway is bounded by steep upward slopes, forcing untreated stormwater to run into the reservoir.

This project seeks to remediate stormwater runoff to these two surface water supplies, as recommended in the DEP SWAP report and the BRPC Draft Pittsfield Watershed Plan. Stormwater BMPs will be designed and installed to mitigate roadway runoff. In addition, the project will initiate outreach to City residents regarding the NPDES Phase II stormwater management plan and the impacts of nonpoint source pollution. The volume of sediment entering into the reservoirs is unknown at this time, although sedimentation problems are evident upon visual inspection. The project will develop a method for measuring the volume of sediment prevented from entering the surface water supplies based on mitigation of current roadway conditions through the implementation of stormwater BMPs. The stormwater BMPs will be designed to meet the 80% TSS removal requirement of the MA Stormwater Management Policy.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Final designs, permits, and installation of three BMPs;
3. Development and implementation of an Operation and Maintenance Plan for the BMPs; and
4. Outreach and education about the project.

PROJECT COST: $ 105,900

FUNDING: $ 63,540 by the US EPA
$ 42,360 by the City of Pittsfield

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-07/319

PROJECT TITLE: Connecticut River Watershed Restoration Phase III
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Franklin Regional Council of Governments
LOCATION: Connecticut Watershed

DESCRIPTION:

Federal and state agencies and watershed groups have identified bank erosion in the 22-mile reach of the Connecticut River known as the Turners Falls Power Pool as a significant source of nonpoint source pollution. Severe bank erosion is contributing sediment to an important anadromous and freshwater fisheries habitat and is also responsible for the loss of prime agricultural cropland and the degradation of riparian habitat used by rare species of dragonflies, bald eagles, migratory birds, and other wildlife. Two previous 319 grants introduced several different bioengineering techniques for riverbank restoration at four priority sites in this reach.

The objectives of this proposal include continuation of this innovative work at another priority site; continued monitoring of the restored sites to evaluate their long-term effectiveness and maintenance requirement; and expanding the technology transfer component of the ongoing work. The technology transfer work will focus on resource and regulatory agency personnel and design professionals who may be interested in learning about and applying similar techniques at other locations.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan for continuous monitoring of sites previously repaired as well as sites to be repaired in this phase of the work;
2. Repair of approximately 1600 linear feet of eroded riverbank;
3. Technical support to the Connecticut River Streambank Erosion Committee; and
4. Technology transfer to private sector professionals as well as local, state, and federal agency personnel.

PROJECT COST: $ 642,196

FUNDING: $ 270,716 by the US EPA
$ 371,480 by Northeast Generation Services

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-08/319

PROJECT TITLE: Powow River Stormwater Management Program
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Amesbury
LOCATION: Merrimack Watershed

DESCRIPTION:

The section of the Powow River running through Amesbury is a popular recreational resource for town residents. Boating, water skiing, fishing and swimming are all common recreation activities performed on the river. Water quality has been a problem for several years with suspended solids, aquatic weed growth, and pathogens predominating causing impairment, resulting in a Category 5 listing for the waterbody. Previous studies have identified stormwater as a likely contributor to water quality problems in the river. Based on recommendations from these reports, several areas along the river and associated tributaries have been selected for installing stormwater best management practices.

Anticipated pollutant load removal for this project is 10,187 lbs. of sediment (TSS) per year and 91lbs. of phosphorus per year. BMPs will consist of 3 narrow baffled tanks, 6 leaching catch basins, and 7 deep sump leaching catch basins. Outreach and education will reduce NPS in the watershed.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Final designs, permits, and installation of BMPs;
3. Development and implementation of an Operation and Maintenance Plan for the BMPs;
4. A storm drain stenciling program;
5. Modification of local bylaws for erosion and sedimentation controls; and
6. Outreach and education to further reduce NPS in the watershed.

PROJECT COST: $ 224,100

FUNDING: $ 124,720 by the US EPA
$ 99,380 by the Town of Amesbury

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-09/319

PROJECT TITLE: Clark and Cobbs Pond Stormwater Management Program
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Walpole
LOCATION: Neponset Watershed

DESCRIPTION:

Clark and Cobbs Ponds are popular recreational resources for town residents in Walpole. Boating, fishing, swimming and water skiing are all popular activities in the ponds. Water quality in the ponds has been a problem for several years with sedimentation, turbidity, and aquatic weed growth predominating and causing Category 5 water quality impairment. Previous studies have identified stormwater as a likely contributor to water quality problems in the ponds. A two-year SRF-funded project to create a Stormwater Management Plan is underway in town. The proposed implementation of Best Management Practices is consistent with the Stormwater Management Plan's ultimate goal of treating and/or reducing stormwater runoff.

Based on recommendations from a previous report, BMPs have been selected to capture and remove pollutants in stormwater runoff that currently discharges into the ponds. The BMPs will consist of four baffled sediment tanks, and eight deep sump/ off-line leaching catch basins with a grassed infiltration strip. Anticipated pollutant load removal from the BMP installation is 6,670 lbs. of sediment (TSS) per year, and 50 lbs. of phosphorus per year.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Final designs, permits, and installation of BMPs;
3. Development and implementation of an Operation and Maintenance Plan for the BMPs;
4. A storm drain stenciling program; and
5. Outreach and education to further reduce NPS in the watershed.

PROJECT COST: $ 206,720

FUNDING: $ 123,720 by the US EPA
$ 82,308 by the Town of Walpole

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-10/319

PROJECT TITLE: Spy Pond Stormwater Management Program
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Arlington
LOCATION: Boston Harbor/Mystic Watershed

DESCRIPTION:

Spy Pond is a popular recreational resource for town residents in Arlington and Belmont. Boating, fishing, and swimming are all popular activities in the pond. Studies have documented that poor water quality has been a problem for a long time in Spy Pond. Five different studies have concluded that high levels of phosphorus found in the pond, transported by stormwater, have impaired the pond's water quality. Category 5 impairments include sediment, phosphorus, weeds, and turbidity. Based on recommendations from these reports and in order to correct sedimentation problems, BMPs were installed in several areas within the Spy Pond watershed and associated tributaries through a DEM grant in 2001. These BMPs include leaching catch basins, storm drain marking, alum and aeration treatment, and a public education program.

Direct discharge of stormwater runoff from the Route 2 sub-basin still poses a threat to the pond's water quality. This project will install additional BMPs to address the Route 2 discharge. BMPs to be installed include six baffled sediment tanks and sixteen deep sump/leaching catch basins. Anticipated pollutant load removal is 10,070 lbs. of sediment (TSS) per year and 87 lbs. of total phosphorus per year.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Final designs, permits, and installation of BMPs;
3. Development and implementation of an Operation and Maintenance Plan for the BMPs;
4. A Storm Drain marking program; and
5. Outreach and education to further reduce NPS in the watershed.

PROJECT COST: $ 298,100

FUNDING: $ 177,520 by the US EPA
$ 120,580 by the Town of Arlington

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-11/319

PROJECT TITLE: Billington Sea Stormwater Remediation Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Plymouth Engineering Department
LOCATION: South Coastal Watershed

DESCRIPTION:

Billington Sea is a natural 269-acre warmwater kettle pond located southwest of the center of Plymouth. The pond is the headwaters of Town Brook, a 1-1/2 mile long stream that empties into Plymouth Harbor. Town Brook is an anadromous fish run for alewife and blueback herring that migrate upstream each spring to spawn in Billington Sea. The pond serves as an important recreational facility, as its eastern shoreline is part of Morton Park, a 180 acre park and recreation area. In addition, a state boat ramp is located on the eastern shore. The eastern portion of the pond is also within the recharge area of a public water supply well.

The primary objective of this project is to improve the water quality in Billington Sea by mitigating the adverse impacts of stormwater runoff and sedimentation through the implementation of Best Management Practices along Billington Sea Road and Black Cat Road. The project will support draft TMDL implementation efforts by reducing pollutant loadings to Billington Sea, which is listed in Category 5 for noxious aquatic plants and turbidity. In addition, it is anticipated that this stormwater pollution remediation project, coupled with several other pollution remediation projects along Town Brook, will significantly improve water quality in the Billington Sea/Town Brook region. Targeted pollutants include fecal coliform, E. coli, total phosphorus, suspended sediments, and nitrogen. It is anticipated that phosphorus loading will be reduced from 52 lbs/yr to 15.6 lbs/yr, and nitrogen loads from 546.70 lbs/yr to 218.70 lbs/yr. BMPs include deep sump/hooded catch basins followed by infiltration galleys. The project also includes an innovative, intensive outreach and education task, based on the principles of community-based social marketing, to encourage the local use of watershed-friendly landscaping techniques.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Final designs, permits, and installation of BMPs;
3. Development and implementation of an Operation and Maintenance Plan for the BMPs; and
4. A Plymouth Greenscapes campaign to encourage the use of landscape-friendly BMPs.

PROJECT COST: $ 280,292

FUNDING: $ 167,773 by the US EPA
$ 112,519 by the Town of Plymouth

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 03-12/319

PROJECT TITLE: Stormwater BMPs for Peppermint Brook and Lily Pond
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Cohasset Board of Water Commissioners
LOCATION: South Coastal Watershed

DESCRIPTION:

Lily Pond, representing approximately 90 percent of the drinking water supply for the Town of Cohasset, currently receives a nutrient load from its watershed in excess of that predicted for good water quality. Studies have classified the pond as eutrophic, with reductions in the nutrient budget required to improve water quality and to preserve the integrity of the drinking water supply. Urban land use and uncontrolled street runoff within the Peppermint Brook sub basin of the Lily Pond watershed contribute a disproportionate share of nutrients and other contaminants to the Pond. Stormwater collection systems within these areas provide little if any pollutant attenuation and represent the areas of greatest risk of catastrophic contamination of the pond.

This project will implement BMP stormwater control devices to improve the water quality and protect Lily Pond. BMP designs will utilize structural best management practices, and will incorporate Low Impact Development urban retrofit strategies wherever possible to contain and minimize off-site flows and pollutant loading in these areas. Structural BMP improvement options to be considered will include hooded catch basins, bioretention facilities, rain gardens, roadside swales with biofilters, and spill containment facilities. Anticipated pollutant load removal is 658 kg/year of nitrogen and 22 kg/year of phosphorus.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Final designs, permits, and installation of BMPs;
3. Development and implementation of an Operation and Maintenance Plan for the BMPs; and
4. Outreach and education to further reduce NPS in the watershed.

PROJECT COST: $ 425,000

FUNDING: $ 255,000 by the US EPA
$ 170,000 by the Cohasset Board of Water Commissioners

DURATION: 2004 – 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-01/319

PROJECT TITLE: Operation and Maintenance of the Massachusetts Alternative Septic System Test Center
NPS CATEGORY: Land Disposal
INVESTIGATOR: Barnstable County Dept. of Health and the Environment
LOCATION: Statewide

DESCRIPTION:

The Massachusetts Septic System Test Center serves as a resource for quality third-party performance information regarding advanced onsite septic system technologies. In addition, the existence of the Test Center promotes the trial of new technologies to reduce nitrogen and phosphorus from wastewater.

This continuing project endeavors to support the state's TMDL program by providing environmental decision makers with the tools by which the goals of the TMDL program can be achieved, especially where wastewater is a major source of pollutant loading. The project proposes to continue the ongoing work of the MASSTC.

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Conducting facility operations,
3. Synthesizing data derived from testing new systems,
4. Reporting on test results, and
5. Outreach and education through published articles and facility tours.

PROJECT COST: $ 228,025

FUNDING: $ 135,775 by the US EPA
$ 92,250 by various onsite system vendors

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-02/319

PROJECT TITLE: Innovative Stormwater Technology Transfer and Evaluation Project
NPS CATEGORY: Urban Runoff/Technology Transfer
INVESTIGATOR: UMass/Amherst
LOCATION: Statewide

DESCRIPTION:

Municipalities in Massachusetts are becoming the first line of defense against nonpoint source pollution. To address this ubiquitous environmental problem, communities need cost-effective stormwater pollution control measures that can treat a range of environmental pollutants, including nutrients, pathogens, organic contaminants, and sediment. Municipal officials are also looking for ways to preserve land for other municipal purposes and improve the quality of their environmental resources through open space preservation. Stormwater BMPs that can effectively treat stormwater runoff with limited land area requirements are highly sought after by communities because the technologies support both of these goals.

The goal of this project is to provide technology transfer information about innovative stormwater BMPs to MADEP, conservation commissions, local officials, and other BMP Users. The project will develop a validated source of technical information on stormwater BMPs, provide end users with qualified information to make appropriate technology implementation decisions, and will assist communities to maximize environmental benefits of grant programs by focusing efforts on technologies that have the most promising potential to reach specific water quality objectives.

Project tasks include:

1. Development of a web-based technology transfer clearinghouse;
2. A critical assessment of stormwater technology user and demonstration needs;
3. Identification and prioritization of available BMP information; and
4. Monitoring to ensure maximum user friendliness.

PROJECT COST: $ 336,827

FUNDING: $ 202,096 by the US EPA
$ 18,376 by EOEA
$ 116,355 by the University of Massachusetts, Amherst

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-03/319

PROJECT TITLE: Low Impact Development Training and Technical Assistance for Local Decision Makers
NPS CATEGORY: Outreach and Education, Technology Transfer
INVESTIGATOR: North and South Rivers Watershed Association
LOCATION: South Coastal Watershed

DESCRIPTION:

Low Impact Development (LID) is a site design strategy with a goal of reducing water quality impacts from residential and commercial development. The primary goal of LID methods is to mimic the predevelopment site hydrology by using site design techniques that store, infiltrate, evaporate, and detain runoff. Use of these techniques helps to reduce off site runoff and ensure adequate groundwater recharge. Since every aspect of site development affects the hydrologic response of the site, LID control techniques mainly focus on site hydrology. Many existing local development rules in Massachusetts's communities do not recognize, allow, or encourage the use of LID tools. In addition, local officials, engineers, developers, and landscape architects are often not fully aware of these techniques that can be utilized to protect natural resources if they are incorporated into local development rules and decision-making processes.

This project will provide direct training and technical assistance to four Southeastern Massachusetts communities (Plymouth, Kingston, Pembroke and Hanover) to promote and implement LID techniques through changes in local regulations and by implementation of direct LID control measures. A conceptual LID design will be developed for each of the four communities.

Project tasks include:

1. Direct assistance to local officials;
2. A series of training workshops for development decision makers at the local, regional, and state levels;
3. Community based social marketing methods to evaluate the effectiveness of the program; LID case studies and design development; and
4. Pollutant load reduction analysis.

PROJECT COST: $ 126,600

FUNDING: $ 84,550 by the US EPA
$ 42,050 by the North and South Rivers Watershed Association

DURATION: 2004 - 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-04/319

PROJECT TITLE: Upper Charles River Watershed Total Maximum Daily Load
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Charles River Watershed Association
LOCATION: Charles Watershed

DESCRIPTION:

In 1995, the EPA launched an effort to restore the Charles River, with a goal of a fishable and swimmable river by Earth Day 2005. Since then, combined sewer overflows have been reduced or eliminated, and over one million gallons per day of raw sewage have been stopped from discharging into the river. Nevertheless, high phosphorus levels remain as a major water quality impairment in the Charles River. This project represents Phase III of a multi-year effort to develop a phosphorus TMDL for the Charles River.

The phosphorus TMDL will be completed, and CRWA will assist with development of a Watershed-Based Plan to support and begin implementation of the TMDL. The project will be evaluated on the timely completion of the tasks, including development of the TMDL and its acceptance by DEP and EPA. A DEP- and EPA-approved Quality Assurance Project Plan will be developed and implemented for monitoring work.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Water quality monitoring;
3. An aquatic plant survey;
4. Flow monitoring;
5. Modeling;
6. Assistance with development of a TMDL and Watershed-Based Plan; and
7. Project Evaluation.

PROJECT COST: $426,067

FUNDING: $ 235,440 by the U.S. EPA
$ 190,627 by Charles River Watershed Association

DURATION: 2005 – 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-05/319

PROJECT TITLE: Phosphorus and Sediment Load Reduction at Quaboag and Quacumquasit Ponds
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Town of Brookfield
LOCATION: Chicopee Watershed

DESCRIPTION:

Quaboag and Quacumquasit Ponds are two of the most highly prized and intensely utilized waterbodies in the state. Quaboag is a relatively shallow (average 6 feet deep) waterbody of 560 acres, located within a drainage area almost 100 times its surface area. It is listed as a Category 5 waterbody, requiring a TMDL for phosphorus. A TMDL is being prepared by the Department and is anticipated to be available in early 2005. Quacumquasit is an adjacent deeper, smaller (220 acres) waterbody that has also been shown in a 1986 Diagnostic/Feasibility study to have excessively high levels of phosphorus.

The goal of this project is to support the TMDL development and implementation by prioritizing and addressing pollutant sources within the shared watershed of the two lakes. Some implementation work that has been previously recommended will be undertaken, and plans will be developed for future implementation that will further reduce the NPS coming into the lakes. Targeted pollutants are nutrients and TSS. The project will be evaluated through development and implementation of a DEP- and EPA-approved Quality Assurance Project Plan (QAPP).
Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Prioritization of pollutant sources;
3. Development of conceptual plans for two or more high-priority BMPs;
4. Evaluation of additional control measures, including the backflow between the two lakes; and
5. Aquatic vegetation management.

PROJECT COST: $ 270,833

FUNDING: $ 162,500 by the U.S. EPA
$ 88,933 by the Quaboag/Quacumquasit Lake Association
$ 10,000 by the ESS Group, Inc.
$ 9,400 by the Town of Brookfield

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-06/319

PROJECT TITLE: Enhancing Implementation of Nutrient Management on Massachusetts Crop/Livestock Farms
NPS CATEGORY: Outreach/Education
INVESTIGATOR: UMass/Amherst
LOCATION: Statewide

DESCRIPTION:

Animal agriculture remains a major threat to the environment through nonpoint source pollution from manure and cropping practices. The main focus of nutrient management planning in Massachusetts has been to reduce the threat from dairy farms. While the dairy industry has the greatest cash receipts and is still the largest holder of open space among the livestock groups, all livestock are important local economic contributors to the Massachusetts economy. This project will continue ongoing work to develop nutrient management plans for livestock operations, with a special focus on equine operations. The sizeable equine industry has often been overlooked as a major livestock group. Many horse owners, like other livestock owners, are not well versed in agriculture and nutrient management practices, and their keeping of animals is often a concern to towns and communities.

The goal of the project is to address nutrient concerns from livestock to reduce the risk of nonpoint source pollution through outreach and educational activities with full and part-time livestock farmers and with service providers who interact with the various livestock groups. The project will be evaluated on the timely completion of the tasks and the number of nutrient management plans that are developed and implemented as a result of this project.

Project tasks include:

1. Coordination with an inter-agency and farmer advisory committee;
2. Educational workshops and meetings for farmers
3. Training for public and private sector service providers and certified planners;
4. Evaluation and improvement of current nutrient management planning process;
5. Implementation of farm nutrient management plans; and
6. On-farm demonstrations.

PROJECT COST: $179,388

FUNDING: $ 99,360 by the U.S. EPA
$ 80,028 by UMass/Amherst

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-07/319

PROJECT TITLE: Stormwater BMP Implementation for Route 28 to Bass River Subwatershed
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Town of Yarmouth
LOCATION: South Coastal Watershed

DESCRIPTION:

The Bass River is an important recreational and economic resource for the towns of Yarmouth and Dennis. Testing and studies have determined that Route 28 road runoff is the highest priority source of contamination of the shellfish beds and general water quality of the Bass River.

This project implements stormwater BMPs under an urban retrofit strategy within a 10-acre drainage area that is tributary to the Bass River at the Route 28 outfall. Four drainage interception and diversion systems are proposed for construction along the half-mile stretch of Rte. 28 in this section. The goal of the project is to improve water quality in the Bass River by treating and infiltrating stormwater runoff from Route 28. BMPs will include hooded catch basins, first flush flow diversion, water quality inlet tanks, and recharge chamber systems. Pollutants of concern include sediment and nutrients. The project will be evaluated through development and implementation of a DEP- and EPA-approved QAPP.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Design, permitting, and installation of BMPs;
3. Development of an Operation and Maintenance Plan for the BMPs; and
4. Public outreach and education.

PROJECT COST: $295,000

FUNDING: $ 174,400 by the U.S. EPA
$ 36,400 by MassHighway
$ 84,200 by the Town of Yarmouth

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-09/319

PROJECT TITLE: Stormwater Management Retrofits for the Samoset Street Outfall to Plymouth Harbor
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Town of Plymouth Engineering Division
LOCATION: South Coastal Watershed

DESCRIPTION:

The Town of Plymouth has undertaken a long-term strategy to improve water quality in Plymouth Harbor, which is impaired by pathogens. The Samoset Street outfall, which discharges to the harbor on the southern side of Town Wharf, drains approximately 118 acres of roadway and high-density residential and commercial property. The outfall is of great concern because of its proximity to 2,204 acres of closed shellfish beds.

The goal of this project is to improve the quality of surface water runoff entering Plymouth Harbor at the Samoset Street outfall. Bioretention facilities will be constructed at three priority sites to capture and treat surface runoff. Designs for the work were produced under a 2003 Coastal Pollution Remediation grant from the CZM program. The pollutant of concern is bacteria, although it is anticipated that other pollutants will also be removed by the BMPs. The project will be evaluated through development and implementation of a DEP- and EPA-approved QAPP.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan;
2. Final designs, permits, and installation of three BMPs;
3. Development and implementation of an Operation and Maintenance Plan for the BMPs; and
4. Outreach and education about the project.

PROJECT COST: $208,050

FUNDING: $ 124,780 by the U.S. EPA
$ 83,270 by the Town of Plymouth

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-10/319

PROJECT TITLE: Pontoosuc Lake Watershed Planning Program
NPS CATEGORY: Watershed-Based Plan
INVESTIGATOR: Berkshire Regional Planning Commission
LOCATION: Housatonic Watershed

DESCRIPTION:

Pontoosuc Lake is a Category 5 waterbody, impaired by metals and exotic aquatic vegetation. The presence of several species of non-native invasive aquatic plants also represents a threat to downstream waterbodies where the plants may spread. Physical and chemical analyses from a recent Diagnostic/feasibility study, ENSR 2000, indicate that there are several management techniques that can be employed to retard eutrophication and weed spread and improve water quality for recreational use.

This project is a combination of research, monitoring, planning, and education activities that builds upon previous studies and 319 projects (99-03/319, 01-14/319). The goal is to develop a Watershed-based Plan consistent with EPA requirements that will support the development and implementation of a TMDL and will lay the groundwork for development and implementation of effective remediation techniques. Project success will be measured through development and implementation of a DEP-and EPA-approved Quality Assurance Project Plan (QAPP).

Project tasks include:

1. Development and implementation of an approved Quality Assurance Project Plan;
2. Conduct water quality monitoring;
3. Conduct a Lake Watershed Survey and develop and Action Plan;
4. Conduct lake watershed cleanups; install lakefront vegetated buffers; and
5. Conduct a public education and outreach effort.

PROJECT COST: $110,350

FUNDING: $ 64,500 by the U.S. EPA
$ 45,850 by the Friends of Pontoosuc

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-11/319

PROJECT TITLE: Cold Spring Brook Watershed Remediation
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Town of Wellesley
LOCATION: Charles Watershed

DESCRIPTION:

This project is intended to restore the structure, function, and water quality of Duck Pond, located on Cold Spring Brook near the Town Hall in Wellesley, MA. The Cold Spring Brook drainage area is comprised of 467 acres of highly developed land that includes Route 9 as well as other town-owned roads and parking areas. Duck Pond, located within this drainage, is highly influenced by stormwater runoff and pollution. In addition to high loads of sediment and associated pollutants, Duck Pond experiences elevated levels of fecal coliform bacteria due to a combination of the resident waterfowl population as well as nonpoint source of bacteria associated with stormwater runoff.

The goal of this project is to reduce sediment, nutrient, and fecal coliform loads to the Charles River via Cold Spring Brook and Fuller Brook through the implementation of structural and non-structural BMPs. Structural BMPs will include a flow distribution pipe for enhanced wetland treatment, and stormwater control devices in the upstream watershed. Project success will be measured through modeling of load reduction estimates brought about by BMP implementation, following a DEP-and EPA-approved Quality Assurance Project Plan (QAPP).

Project tasks include:

1. Development and implementation of an approved Quality Assurance Project Plan (QAPP);
2. Final designs, permits, and installation of BMPs;
3. Development and implementation of an Operation and Maintenance Plan for the BMPs; and
4. Outreach and education about the project.

PROJECT COST: $197,800

FUNDING: $ 118,700 by the U.S. EPA
$ 79,100 by the Town of Wellesley

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-12/319

PROJECT TITLE: Demonstration Boat Bottom Wash Water System
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Manchester Marine
LOCATION: Statewide/Coastal

DESCRIPTION:

Ordinary maintenance of boats includes power washing of boat bottoms to remove accumulated material that may contribute to degradation of the hull material and interfere with the boat's operation. Studies have shown that boat bottom washwater may contain pollutants including toxic metals, oil and grease, chlorine, ammonia, antifreeze, solvents, and other harmful material. The USEPA has promulgated regulations that require this washwater to be treated as industrial or process wastewater, but has offered few definitive means or recommended BMPs to assist boatyards to comply with the regulations. With the support of the Massachusetts Office of Coastal Zone Management, Manchester Marine will install a recycling boat bottom washing system. They will then conduct an extensive education and outreach program aimed at demonstrating this BMP to other boatyards, to make them aware of this BMP and encourage its adoption in other boatyards.

Currently, despite the regulations, boat bottom wash water is frequently allowed to run onto the ground. The goal of this project is to encourage the adoption of an effective BMP that will eliminate this significant source of NPS at boatyards. The project will be evaluated through development and implementation of a Quality Assurance Project Plan (QAPP).

Project tasks include:

1. Development and implementation of an approved Quality Assurance Project Plan;
2. Design and construction of a recycling boat bottom washing system;
3. An extensive outreach and education campaign to make other boatyards aware of this BMP and encourage its adoption elsewhere.

PROJECT COST: $195,596

FUNDING: $ 117,357 by the U.S. EPA
$ 78,238 by Manchester Marine

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-14/319

PROJECT TITLE: Development of Watershed-Based Plans
NPS CATEGORY: n/a
INVESTIGATOR: BETA Group, Inc.
LOCATION: Statewide

DESCRIPTION:
The purpose of this project is to develop a Watershed-Based Plan for each of the 27 major Massachusetts basins. As outlined in the EPA's **Nonpoint Source Program and Grants Guidelines for States and Territories** (Oct. 23, 2003), EPA is requiring that a WBP be developed as a prerequisite for funding future 319 projects. Watershed-Based Plans developed under this project must contain the following elements:

1. Identification of causes and sources or groups of similar sources that will need to be controlled
2. Estimate of load reductions expected for the management measures described
3. Description of management measures that will need to be implemented to achieve the load reductions and identification of critical areas in which those measures will be needed.
4. Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement the plan.
5. Education/outreach used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.
6. A reasonably expeditious schedule for implementing the NPS management measures ID'ed in the plan.
7. Description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.
8. Criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining WQ standards. And, if not, criteria for determining whether the plan or TMDL needs to be revised.
9. Monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria in item 8. above.

Wherever possible, the Watershed-Based Plan will incorporate existing information from other documents, e.g. various state and local watershed planning documents or watershed plans. The resulting Watershed-Based Plan must be designed to achieve the load reductions called for in a NPS TMDL, and, in doing so, should be designed to meet water quality standards.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Identification and compilation of existing documents and data that will be used to satisfy the required elements;
3. Identification of data gaps and modeled estimates to address them;
4. Development and implementation of a workplan to address any elements that have not already been addressed in previous studies; and
5. Synthesis of new and existing information into an individual WBP for each of 27 major basins.

PROJECT COST: $970,283

FUNDING: $ 582,170 by the U.S. EPA
$ 388,113 by the Commonwealth of Massachusetts

DURATION: 2005 – 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-15/319

PROJECT TITLE: Dudley Pond Comprehensive Water Quality Improvement Project
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Town of Wayland
LOCATION: SuAsCo Watershed

DESCRIPTION:

Dudley Pond is an 84-acre great pond in the Concord River watershed. The Pond is Category 5 listed for turbidity and exotic species. In addition to turbidity from nonpoint watershed sources, nuisance growth of Eurasian milfoil is a serious problem for the Pond that significantly impairs its ecological and recreational value. This project is part of a long-term strategy to mitigate water quality impairment in Dudley Pond using both in-lake and watershed BMPs.

This project will reduce sediment and nutrient loads to Dudley Pond by implementing low impact development BMPs and restoring a section of eroding riverbank. To help control aquatic vegetation, milfoil weevils will be introduced and diver hand-pulling will be conducted in targeted areas. Targeted pollutants include sediment, nutrients, and Eurasian milfoil. Project success will be measured through development and implementation of a DEP-and EPA-approved Quality Assurance Project Plan (QAPP).

Project tasks include:

1. Development and implementation of an approved Quality Assurance Project Plan;
2. Construction of a bioretention cell;
3. Outlet protection/bank restoration;
4. Introduction of milfoil weevils;
5. Milfoil hand pulling;
6. Catch basin stenciling; and
7. Public outreach and education.

PROJECT COST: $ 70,458

FUNDING: $ 42,150 by the U.S. EPA
$ 9,200 by the Town of Wayland
$ 19,108 by the Dudley Pond Association

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-16/319

PROJECT TITLE: Tree Box Filters as a Tool for Implementing the Neponset Bacteria TMDL
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Neponset River Watershed Association
LOCATION: Boston Harbor Watershed/Neponset

DESCRIPTION:

Despite tremendous improvements in water quality along the Neponset River in the last two decades, much of the Neponset River and many of its tributaries continue to fall short of their designated standards for primary and secondary recreational contact because of bacteria related to pet waste, wildlife and other sources entering the river from stormwater runoff. In response to these continued problems, a TMDL has been developed which cites Nonpoint sources in urban runoff as a major contributor of the bacteria.

This project will partially implement the Neponset River Watershed bacteria TMDL by retrofitting an existing "curb and catch basin" drainage system in the Central Crossing neighborhood of Milton using tree filter boxes. Tree filter boxes are prefabricated bioretention cells that can be readily integrated into existing streetscapes with minimal engineering and permitting costs. Research on bioretention and tree filter boxes has indicated that fecal coliform removal rates will be 80% or higher. The project goal is to reduce bacterial loading to Pine Tree Brook and the lower Neponset River while raising awareness of tree filter boxes as a cost- and value-effective means of addressing the widespread problem of bacteria from untreated stormwater runoff in the Neponset Basin.

The anticipated environmental results include an 80%+ reduction in bacteria, nutrient, and sediment loading from urban runoff in the treated drainage system. A modest reduction in total runoff volumes and corresponding increase in groundwater recharge and stream base flow is also expected. Substantial technology transfer and public education benefits are expected as well.

Project tasks include:

1. Development of a DEP and EPA Approved Quality Assurance Project Plan;
2. Implementation of nineteen tree box filters;
3. Development of an Operations and Maintenance Plan; and
4. A public Education and Outreach program.

PROJECT COST: $ 221,309

FUNDING: $ 132,433 by the U.S. EPA
$ 7,755 by NepRWA
$ 81,121 by the Town of Milton

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 04-17/319

PROJECT TITLE: Erosion and Sediment Control and Stormwater Management at Construction Sites using Soils- and Compost-Based Best Management Practices
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Patriot Resource Conservation and Development Area Council, Inc.
LOCATION: Charles River Watershed

DESCRIPTION:

Statistics from the US EPA show that sediment loads from construction activities are among the greatest compared to other land uses and activities. Assessments have documented that a construction site of 4.75 acres where 4.2 percent of the site is disturbed will increase the sediment yield three fold above natural levels. The goal of this project is to demonstrate and help institutionalize the use of compost and amended soil BMPs for erosion and sediment control and stormwater runoff at active construction sites. This will be done by employing these best management practices at a redevelopment project and comparing the methods with more traditional practices.

The Olmsted Green mixed use development project at the former Boston State Hospital in Mattapan will be the site of this project. This property is within a highly urbanized area of the Charles River basin. During the redevelopment project, soil and compost-based erosion controls will be employed side-by-side with standard BMPs such as geosynthetic silt fence and hay bales, to determine and demonstrate the effectiveness of the compost-based BMPs for erosion control. Extensive outreach and education will be conducted concurrently to encourage more widespread use of compost BMPs. Target audiences include construction companies, land developers, stormwater permitting agencies and other stakeholders involved or interested in construction and development. Findings will be disseminated through publications and presentations.

The targeted pollutant is sediment. The project will be evaluated through development and implementation of a DEP- and EPA-approved QAPP.

PROJECT COST: $ 589,810

FUNDING: $ 269,060 by the U.S. EPA
$ 320,750 non-federal match from the following sources:

$	75,000 WeCare Organics	$	2,050 Kuhn-Knight
$	50,000 Apple D'Or Tree, Inc.	$	4,800 BioCycleMagazine
$	54,342 Lena New Boston	$	7,200 Patriot RC&D
$	8,935 New Ecology Inc.	$	5,000 Roto-Mix

$ 46,000 Vanasse Hangen Brustlin, Inc
$ 20,030 City Soil and Greenhouse Co.
$ 18,000 Boston Public Works Department
$ 10,015 Soil and Water Quality Alliance
$ 9,703 Massachusetts Audubon
$ 8,910 Suffolk Conservation District
$ 525 Boston Parks and Recreation Department
$ 240 Boston Conservation Commission

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 05-01/319

PROJECT TITLE: Operation and Maintenance of the Massachusetts Alternative Septic System Test Center
NPS CATEGORY: Land Disposal
INVESTIGATOR: Barnstable County Dept. of Health and the Environment
LOCATION: Statewide

DESCRIPTION:

The Massachusetts Estuaries Program (Project 01-26/319) is in the final phase of developing Total Maximum Daily Load (TMDL) allocations for nitrogen in some marine estuaries in Barnstable County. As implementation strategies begin to be developed in Barnstable County and elsewhere, the question remains as to whether innovative/alternative septic systems can provide an enhanced level of treatment that will help provide the necessary pollutant load reductions to meet TMDL goals.

The Massachusetts Septic System Test Center serves as a resource for quality third-party performance information regarding advanced onsite septic system technologies. In addition, the existence of the Test Center promotes the trial of new technologies to reduce nitrogen and phosphorus from wastewater. This continuing project endeavors to support the state's TMDL program by providing environmental decision makers with the tools by which the goals of the TMDL program can be achieved, especially where wastewater is a major source of pollutant loading. The project proposes to continue the ongoing work of the MASSTC. The project will be evaluated through development and implementation of a DEP- and EPA-approved Quality Assurance Project Plan (QAPP).

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Conducting facility operations,
3. Synthesizing data derived from testing new systems,
4. Reporting on test results, and
5. Outreach and education through published articles and facility tours.

PROJECT COST: $ 265,805

FUNDING: $ 116,555 by the U.S. EPA
$ 149,250 by various onsite system vendors

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 05-03/319

PROJECT TITLE: Windsor Reservoir Restoration Project
NPS CATEGORY: Resource Restoration
INVESTIGATOR: Dalton Fire District
LOCATION: Housatonic Watershed

DESCRIPTION:

Windsor Reservoir is an approximately 62-acre drinking water reservoir located in the towns of Hinsdale and Windsor. It serves as the primary drinking water source for the town of Dalton. The Dalton Fire District is charged with providing drinking water to Dalton from this reservoir and two other surface water sources as well as one groundwater source. In August 2003, severe storms dumped 10" of rainfall on the area in a one-hour period. The resulting local flooding and erosion of the gravel roadways adjacent to the Windsor Reservoir caused an immediate shutdown of the water supply due to excess turbidity. The instability of the roadway and excessive deposits of sediment have caused problems ever since. The watershed towns of Hinsdale and Windsor have been reluctant to allocate scarce local resources to address roadway problems in an area that is not a priority part of their own infrastructure.

The goal of this project is to repair and stabilize the roadways, install flood protection and stormwater BMPs, and remove accumulated sediment from the inlet tributary. This work is recommended in a SWAP report for the water supply. Pollutants of concern are sediment, turbidity, and phosphorus. The project will be evaluated through development and implementation of a DEP- and EPA-approved QAPP.

Project tasks include:

1. Development and implementation of a Quality Assurance Project Plan (QAPP);
2. Final designs, permits, and installation of BMPs;
3. Development and implementation of an Operation and Maintenance Plan for the BMPs; and
4. Outreach and education about the project.

PROJECT COST: $150,000

FUNDING: $ 90,000 by the U.S. EPA
$ 60,000 by the Dalton Fire District

DURATION: 2005 - 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 05-04/319

PROJECT TITLE: Operation and Maintenance of the Massachusetts Alternative Septic System Test Center and Investigation into Onsite Treatment of Endocrine-Disrupting Compounds
NPS CATEGORY: Land Disposal
INVESTIGATOR: Barnstable County Dept. of Health and the Environment
LOCATION: Statewide

DESCRIPTION:

The Massachusetts Estuaries Program (Project 01-26/319) is in the final phase of developing Total Maximum Daily Load (TMDL) allocations for nitrogen in some marine estuaries in Barnstable County. As implementation strategies begin to be developed in Barnstable County and elsewhere, the question remains as to whether innovative/alternative septic systems can provide an enhanced level of treatment that will help provide the necessary pollutant load reductions to meet TMDL goals.

The Massachusetts Septic System Test Center serves as a resource for quality third-party performance information regarding advanced onsite septic system technologies. In addition, the existence of the Test Center promotes the trial of new technologies to reduce nitrogen and phosphorus from wastewater. This continuing project endeavors to support the state's TMDL program by providing environmental decision makers with the tools by which the goals of the TMDL program can be achieved, especially where wastewater is a major source of pollutant loading. The project proposes to continue the ongoing work of the MASSTC.

In addition to nitrogen, another emerging concern of onsite wastewater disposal is the treatment of pharmaceuticals and personal care products (PPCPs) and their possible role in the disruption of normal endocrine functions in humans and wildlife. Initial data taken from beneath standard the Title 5 system and the recirculating sand filter systems at the MASSTC suggest that these systems may not adequately treat for PPCPs. A study will be conducted to develop information vital to decision makers involving the effectiveness of onsite systems for treatment of these potentially endocrine disrupting compounds. The project will be evaluated through development and implementation of a DEP- and EPA-approved Quality Assurance Project Plan (QAPP).

Project tasks include:

1. Development of a Quality Assurance Project Plan;
2. Conducting facility operations;
3. Synthesizing data derived from testing new systems;
4. Evaluating PPCP treatment;
5. Reporting on test results; and
6. Outreach and education through published articles and facility tours.

PROJECT COST: $ 256,361

FUNDING: $ 153,611 by the U.S. EPA
$ 102,750 by various onsite system vendors

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 05-05/319

PROJECT TITLE: Drumlin Farm Nonpoint Source Stormwater Management Project
NPS CATEGORY: Agricultural Runoff
INVESTIGATOR: Massachusetts Audubon Society, Inc.
LOCATION: Charles River Watershed

DESCRIPTION:

Drumlin Farm Wildlife Sanctuary in Lincoln is the Massachusetts Audubon Society's flagship sanctuary. The farm property includes 232 acres of fields, forests, and ponds, highlighted by a working farm complex. Drumlin Farm has as many as 150,000 visitors per year.

A pond on the property serves as an important educational resource for thousands of students, educators and parents who come to the Farm each year to learn about pond organisms and ecology. Runoff from the main farm complex, including pens and pastures for poultry and livestock, drains via overland flow into the pond. Runoff from adjacent Route 117 also carries pollutants into the pond. The overload of sediment, nutrients and bacteria from these combined sources causes increasing sedimentation, elevated coliform levels, and algal blooms, impairing the habitat of the pond and limiting its usefulness as a unique resource and teaching tool.

Best Management Practices designed to treat agricultural runoff will be constructed to retain, treat and disperse the runoff from the farm area concurrently with construction of a new farm building. Educational and interpretive resources will also be created to inform the general public and potential BMP users about the water quality improvement practices being put into place. Pollutants of concern are pathogens, nutrients, and total suspended solids. The project will be evaluated through development and implementation of a DEP- and EPA-approved QAPP.

PROJECT COST: $ 49,990

FUNDING: $ 29,994 by the U.S. EPA
$ 19,996 by Massachusetts Audubon Society Inc.

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 05-06/319

PROJECT TITLE: Pembroke LID Retrofit Implementation Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: North and South Rivers Watershed Association
LOCATION: South Coastal Watershed

DESCRIPTION:
The Town of Pembroke is one of many rapidly growing communities in the south coastal area. It currently has 4 waterbodies listed as Category 5 waters on the MA Year 2002 Integrated List of Impaired Waters. Impairments include organic enrichment, low dissolved oxygen, nutrients, pathogens, and metals. Additionally, Pembroke has 3 waterbodies listed as impaired by exotic species. Previous studies have indicated that nonpoint source pollutants are one of the greatest factors impacting water quality in the listed waterbodies.

The goal of this project is to improve water quality and enhance groundwater levels through the implementation of Low Impact Development (LID) Best Management Practices (BMPs). LID is a design strategy that seeks to maintain or replicate the pre-development hydrology on a site.
The project will focus on retrofitting the Town Hall and the Oldham Pond Boat Ramp with Low Impact Development (LID) techniques to help improve water quality. LID BMPs to be utilized include rain gardens, leaching catch basins, permeable pavers, and grassed level spreaders.

Tasks include

1. Development of a DEP and EPA Approved Quality Assurance Project Plan;
2. Implementation of LID retrofit BMPs;
3. Development of an Operations and Maintenance Plan;
4. A public Education and Outreach program; and
5. Continuation of the Greenscapes Program.

Anticipated pollutant load removals per year:

- 18,730 lbs. of total suspended solids
- 2 lbs. total phosphorus
- 17 lbs. nitrogen
- 5 lbs. metals
- 100% bacteria removal

PROJECT COST: $ 271,924

FUNDING: $ 160,800 by the U.S. EPA
$ 111,124 by the Town of Pembroke

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 05-07/319

PROJECT TITLE: Kingston Elementary School LID Retrofit Implementation Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: North and South Rivers Watershed Association
LOCATION: South Coastal Watershed

DESCRIPTION:

The Town of Kingston is one of many rapidly growing communities in the south coastal area. It currently has 3 waterbodies listed as Category 5 waters on the MA 2002 Integrated List of Impaired Waters, including the Jones River. Impairments include pathogens, turbidity and noxious aquatic plants. Additionally, Kingston has 3 listed waterbodies as Category 4C for exotic species. Previous studies of these impaired waters have clearly indicated nonpoint source pollutants to be one of the greatest sources of water quality problems in the watershed.

Low Impact Development (LID) is a design strategy with a goal of maintaining or replicating the pre-development hydrologic regime on a site. LID elements incorporate techniques that focus on stormwater storage, infiltration, and groundwater recharge. The proposed project will focus on retrofitting the Kingston Intermediate School with various LID techniques designed under a previous 319 project (04-03/319) to help improve the water quality of the Jones River Watershed and reestablish the site's natural hydrology.

Tasks include

1. Development of a DEP and EPA Approved Quality Assurance Project Plan;
2. Implementation of LID retrofit BMPs;
3. Development of an Operations and Maintenance Plan;
4. A public Education and Outreach program; and
5. Continuation of the Greenscapes Program.

Anticipated pollutant load removals per year:

1. 31,501 lbs. of total suspended solids
2. 23 lbs. total phosphorus
3. 180 lbs. nitrogen
4. 55 lbs. metals
5. 100% bacteria removal

PROJECT COST: $ 254,732

FUNDING: $ 152,780 by the U.S. EPA
$ 101,952 by the Town of Kingston

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 05-08/319

PROJECT TITLE: Children's Wharf Project: Growing the Next Generation of Environmental Stewards
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Boston Children's Museum
LOCATION: Boston Harbor

DESCRIPTION:

Since 2000, the Fort Point Channel has been the focus of significant attention within the City of Boston. As part of the Municipal Harbor Plan for the South Boston area, the Fort Point Channel was specifically called out as an area with great potential, launching an intensive and inclusive activation planning effort through the Boston Redevelopment Authority. During the planning of the Channel vision, it was quickly acknowledged that water quality is a key to realizing the potential of the Fort Point. Currently, the Fort Point Channel is listed as a Category 5 waterbody, impaired by priority organics and pathogens due to stormwater runoff and combined sewer overflows. With this project, the Boston Children's Museum will mitigate pollutants from stormwater runoff by incorporating Best Management Practices into the design and construction of a facility expansion and renovation project.

Project tasks will include construction of a green roof, stormwater reclamation system, rainwater harvesting, and other low-impact development practices to encourage infiltration and reuse of stormwater. An extensive public outreach and education task will include hands-on interactive displays, interpretive signage, and special programs to educate children, educators, and other adult caregivers about the new onsite stormwater management practices and the importance of individual actions and activities to improve water quality.

Pollutants of concern are total suspended solids, phosphorus, and pathogens. The project will be evaluated through development and implementation of a DEP- and EPA-approved QAPP.

PROJECT COST: $ 833,334

FUNDING: $ 500,000 by the U.S. EPA
$ 333,334 by the Boston Children's Museum

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 05-09/319

PROJECT TITLE: Old Oaken Bucket Pond Watershed NPS Improvements
NPS CATEGORY: Urban Runoff, Water Supply Protection
INVESTIGATOR: Town of Scituate
LOCATION: South Coastal Watershed

DESCRIPTION:

Old Oaken Bucket Pond, located in Scituate, MA is an Outstanding Resource Water and serves as the Town's primary drinking water supply. It is listed on the MA 303d List of Impaired Waters as Category 5 for noxious aquatic plants and turbidity. Old Oaken Bucket Pond serves as a source for the Herring River and ultimately the North River, both listed as impaired on the 303d list for pathogens. The majority of land within the watershed is zoned as residential with several areas zoned for commercial and industrial. Current imperviousness and increasing development pressures have become a threat to water quality, causing excessive sedimentation, nuisance aquatic plants and an increase in nutrient levels.

The goal of the project is to improve the water quality of Old Oaken Bucket Pond through the implementation of LID based BMPs within the watershed. BMPs will be used to improve the water quality flowing directly into Old Oaken Bucket Pond as well as help improve the quality of water feeding the Herring River and ultimately the North River.

Five locations have been selected within the Old Oaken Bucket watershed with LID elements/BMPs, focusing around the installation of multiple raingardens for stormwater control, treatment and infiltration of roadway runoff. Additional elements include an infiltration trench and the installation of several leaching catch basins. The proposed BMPs are expected to reduce nonpoint source pollutants currently entering Old Oaken Bucket Pond, its tributaries and ultimately the Herring River and North River. The proposed BMPs were also selected to showcase how LID elements can be incorporated to help improve a water supply source as well as treat municipal roadway runoff. The project will be evaluated through development and implementation of a DEP- and EPA-approved QAPP.

Based on land use factors, typical stormwater concentrations of pollutants, design characteristics and system removal efficiencies, the following estimated quantities of targeted pollutants can be removed:

- 82,128 lbs. of Total Suspended Solids per year
- 15 lbs. of Total Phosphorus per year
- 94 lbs. of Nitrogen per year
- 100% bacterial removal per year

PROJECT COST: $ 250,128

FUNDING: $ 148,778 by the U.S. EPA
$ 101,350 by the Town of Scituate

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
SECTION 319 NPS PROJECT 05-10/319

PROJECT TITLE: Lake Shirley Low Impact Development Stormwater Improvement Project
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Lunenburg
LOCATION: Nashua Watershed

DESCRIPTION:
Lake Shirley is a 354-acre great pond located within the Nashua River watershed in Lunenburg and Shirley, MA. Lake Shirley is an important ecological and recreational resource for the Town of Lunenburg and surrounding communities. The lake is on the Massachusetts Year 2002 Integrated List of Waters for impairments by noxious aquatic plants, turbidity, and exotic species. The Lake Shirley Improvement Corporation (LSIC) and the Town of Lunenburg have led an ongoing effort to assess and provide long-term solutions to the water quality and nuisance plant problems in the Lake.

Each element of this project has been designed to mitigate the identified impairments in Lake Shirley. The four major project goals are as follows:

- Reduce sediment and nutrient loading to Lake Shirley by installing a variety of Low Impact Development stormwater management controls throughout the watershed.
- Conduct a lake-level drawdown for nuisance plant control
- Develop a Lunenburg Best Development Practices Guidebook
- Provide public education outreach to watershed residents.

Tasks include

1. Development of a DEP and EPA Approved Quality Assurance Project Plan;
2. Implementation of LID BMPs at twelve sites;
3. Development of an Operations and Maintenance Plan;
4. Development of a Town of Lunenburg Best Development Practices Guidebook;
5. Continuation of a lake-level drawdown program;
6. A public Education and Outreach program; and
7. An aquatic vegetation survey program.

Targeted pollutants include sediments, nutrients, and nuisance aquatic plants. The project will be evaluated through development and implementation of a DEP- and EPA-approved QAPP.

PROJECT COST: $ 148,030

FUNDING: $ 87,370 by the U.S. EPA
$ 27,500 by the Lake Shirley Improvement Committee
$ 23,300 by private contractors
$ 9,960 by the Town of Lunenburg

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 05-11/319

PROJECT TITLE: Congamond Lakes FY 06
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Pioneer Valley Planning Commission
LOCATION: Westfield Watershed

DESCRIPTION:
The Congamond Lakes are comprised of three interconnected ponds: North Pond, Middle Pond, and South Pond. The lakes are located in the Westfield river watershed in Southwick, Massachusetts, with the eastern shores of Middle and South Ponds forming the Connecticut state border. Southwick has evolved from a rural farming community to a bedroom community over the past twenty years, and the shoreline of the Ponds has become densely developed. The Ponds are listed in the Massachusetts Integrated List of Waters under Category 4c, impaired by nuisance aquatic weeds.

With this project, Southwick will continue its ongoing efforts to address the water quality problems in the Lakes. A previous 319 project (02-03/319) implemented recommendations of a 1983 Diagnostic Feasibility Study to reduce phosphorus loading in the Middle Pond. The current project will undertake similar work on four additional subwatersheds on Middle Pond, with a goal of reducing sediment loading and associated pollutants as well as invasive weed populations.

Tasks include

1. Development of a DEP and EPA Approved Quality Assurance Project Plan;
2. Implementation of BMPs in four subwatersheds;
3. Development of an Operations and Maintenance Plan;
4. A public Education and Outreach program; and
5. An aquatic weed management program.

PROJECT COST: $ 354,480

FUNDING: $ 212,500 by the U.S. EPA
$ 139,400 by the town of Southwick
$ 2,950 by the Lake Management Committee

DURATION: 2006 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 319 NPS PROJECT 06-01/319

PROJECT TITLE: Orange Riverfront Park: Using Low Impact Development Techniques to Manage Stormwater Runoff
NPS CATEGORY: Urban Runoff
INVESTIGATOR: Town of Orange
LOCATION: Millers Watershed

DESCRIPTION:

Urban Runoff discharges from stormwater outfalls are the single largest source of pollution responsible for water quality problems in many of the rivers, streams, and lakes in the state. Recent assessment projects conducted for the Millers River watershed have identified stormwater as a major contributor of nonpoint source pollution.

The purpose of this project is to introduce local officials in the Town of Orange to an alternative to the conventional 'pipe and pond' approach to stormwater management – Low Impact Development (LID). LID is an ecologically-based approach to stormwater management that creates a hydrologically functional landscape, which generates less surface runoff and less nonpoint source pollution. This is especially important for development projects that are adjacent to sensitive resource areas. The project will create an outdoor LID classroom, showcasing several different LID techniques including porous pavement, rain barrels, bioretention cells, and rain gardens. Stormwater will infiltrate back into the ground, removing pollutants and recharging groundwater.

The site is a .72-acre former brownfields parcel adjacent to the Millers River that is being developed into a Riverfront Park. Interpretive signs will be installed to inform visitors about the LID features and functions, and will be used as a demonstration site to encourage others to implement similar LID practices in other areas.

Project tasks include

1. Development of a DEP and EPA Approved Quality Assurance Project Plan (QAPP);
2. Installation of LID BMPs;
3. Development of an Operation and Maintenance Plan; and
4. A public outreach and education program

PROJECT COST: $ 376,388

FUNDING: $ 224,600 by the U.S. EPA
$ 151,788 by the Town of Orange (anticipated Urban Self-Help funds)

DURATION: 2006 – 2009

APPENDIX
319 NONPOINT SOURCE PROGRAM PROJECTS 1990-2001

90-01/319 **Avon Industrial Park Storm Water Management**
by Old Colony Planning Council

90-02/319 **Milkroom Wastewater Treatment Demonstration**
by Northwest Worcester Co. Conservation Dist.

90-03/319 **Pesticide Handling Demonstration**
by Franklin, Hampden & Hampshire Co. Conservation Districts

90-04/319 **Development of Pesticide Data and Support System for Risk Assessment**
by Worcester County Conservation District

90-05/319 **North and South Rivers Storm Water Mitigation**
by North & South Rivers Watershed Assoc.

91-01/319 **Soil Morphology as an Indicator for Maximum Groundwater Elevation Levels in MA**
by UMass, Amherst, Department of Plan and Soil Sciences

91-02/319 **Rehabilitation and Evaluation of the Sterling Filter Beds at Wachusett Reservoir**
by MDC, Division of Watershed Management

91-03/319 **Soil Bioengineering Streambank Protection Measures on the Blackstone and North Rivers**
by Franklin, Hampden & Hampshire Co. Conservation Districts

91-04/319 **Investigation of Low-Input Cranberry Production**
by UMass, Amherst, Entomology Dept.

91-05/319 **Hydrogeologic Evaluation of the Waquoit Bay Land Margin Ecosystem**
by Cape Cod Commission

92-01/319 **Sprague Cove Storm Water Remediation**
by Town of Marion

92-02/319 **Control of Urban Runoff in the Connecticut, Merrimack and Sudbury River Basins**
by Metropolitan Area Planning Council

92-03/319 **Ipswich River Nonpoint Source Prevention Program**
by MDFWELE, Riverways

92-04/319 **Technical Support for Developing and Implementing Urban Runoff Nonpoint Source Control Strategies in the Merrimack River Basin**
by DEP, Division of Water Supply

93-01/319 **Storm Water Remediation for the Broad Marsh River**
by Town of Wareham

93-02/319 **Sediment and Erosion Control in the Taunton River Basin Program**
by MDFWELE, Riverways

93-03/319 **Artificial Recharge Evaluation and Guidance to Municipalities**
by Pioneer Valley Planning Commission

93-04/319 **H_2Ome Check Pilot Project**
by Nashua River Watershed Association

93-05/319 **Commercial Underground Storage Tank Compliance**
by Barnstable County Department of Health and the Environment

93-10/319 **Cape Cod Coastal Nonpoint Source Management Plan**
by Cape Cod Commission

93-11/319 **Wachusett Septic System Management System**
by UMass Cooperative Extension, Amherst

93-12/319 **Nitrogen Loading Model Computer Program Development**
by Horsley & Witten, Inc.

93-13/319 **Development and Outreach of an Erosion and Sedimentation Control Guide for Massachusetts**

by Franklin, Hampden & Hampshire County Conservation Districts

94-01/319 **Best Management Practices to Control Nonpoint Source Pollution from Forestry Operations**
by Berkshire-Pioneer Resource Conservation and Development Area

94-03/319 **Green River Soil Bioengineering Demonstration Project**
by Berkshire Conservation District

94-05/319 **Alternative Onsite Septic Systems – Encouraging Their Use in Environmentally Sensitive Areas of Barnstable County**
by Barnstable County Dept. of Health and the Environment

94-06/319 **Orleans Storm Water Remediation Project**
by Cape Cod Conservation District

94-07/319 **Mill River Nonpoint Source Management Project**
by Mass Audubon Society, North Shore

94-08/319 **Lake Tashmoo Storm Water Remediation Project**
by Tisbury Waterways, Inc.

94-09/319 **Jones River/Billington Sea Nonpoint Source Pollution Control Project**
by Pilgrim Resource Conservation & Development Area Council, Inc.

95-01/319 **Lake Lorraine and Fivemile Pond Nonpoint Source Project**
by Pioneer Valley Planning Commission

95-02/319 **A Demonstration Program to Mitigate Storm Drain Pollution Impacting Shellfish Beds**
by MA Coastal Zone Management

95-03/319 **Buttermilk Bay Storm Water Remediation Project**
by Town of Bourne

95-04/319 **Demonstration of Urban Pollution Control in the Green River Watershed**
by Franklin, Hampden and Hampshire Conservation District

95-05/319 **Demonstration of an Alternative Onsite Wastewater Disposal System at Allen's Pond Wildlife Sanctuary** by Buzzards Bay Project

95-06/319 **Comprehensive Nonpoint Source Management in the Mill River Subwatershed, Hatfield, MA**
by Pioneer Valley Planning Commission

95-07/319 **Title 5 Training for Boards of Health in Five Towns in Barnstable County**
by Barnstable County Department of Health and the Environment

95-08/319 **Swan Pond River Storm Water Remediation Project**
by Town of Dennis

95-09/319 **Buzzards Bay Action Committee-Holmes Brook Restoration**
by Buzzards Bay Action Committee

95-10/319 **Developing and Conducting Training Workshops for the Revised Regulations for MGL C 132, Forest Cutting Practices Act**
by Berkshire-Pioneer Resource Conservation and Dev. Area Council

95-11/319 **Neponset River Fishway Project**
by MA DEP

96-01/319 **Septic System Management 2000 Project**
by Cooperative Extension System, UMass, Amherst

96-02/319 **Monitoring Strategies for Innovative Onsite Sewage Disposal Technologies**
by UMass, Amherst and Lowell

96-03/319 **Connecticut River Watershed Restoration Project**
by Franklin County Commission

96-04/319 **Demonstration of Urban Streambed Stabilization and Wetlands Function and Wildlife Habitat Improvement Using Soil Bioengineering Treatments at Hearthstone Quarry Brook, Chicopee**
by City of Chicopee

96-05/319 **Spicket River Watershed Revitalization**
by Merrimack River Watershed Council

96-08/319 **Statewide Outreach Course and Tool Kit and Central Massachusetts Partnership Pilot**

by Worcester County Conservation Districts

96-09/319 **Sub-Basin Assistance for the SuAsCo and Charles River Watersheds**
DFWELE, Riverways Program

96-10/319 **Watershed Display on NPS Information, Basin Team Newsletter and Resident Survey**
by Berkshire Conservation District

96-11/319 **Watershed Education Teaching (WET) Program**
by UMass Cooperative Extension System, Amherst

97-01/319 **Development of Stormwater Utilities in Two Demonstration Communities: Chicopee & South Hadley**
by Pioneer Valley Planning Commission

97-02/319 **Red Lily Pond Rejuvenation**
by Town of Barnstable

97-03/319 **Technical Outreach to Communities Regarding Alternative Onsite Septic Systems**
by Barnstable County Dept. of Health and the Environment

97-04/319 **Alternative Septic Systems Technologies Workshop Program**
by Berkshire Regional Planning Commission

97-05/319 **Leak Prevention for Heating Oil Storage Systems**
by Barnstable County Dept. of Health and the Environment

97-07/319 **Protecting Nitrogen Sensitive Coastal Embayments Through Land Conservation**
by Buzzards Bay Project

97-08/319 **Hall's Pond Wetlands Restoration Project**
by Town of Brookline

97-09/319 **Three Bay Area - Ropes Beach Subwatershed**
by Town of Barnstable

98-01/319 **Determining the Effectiveness of Onsite Septic Systems for the Removal of Viruses**
by Barnstable County Dept. of Health and the Environment

98-03/319 **Coastal Embayment/Title 5 Training Video**
by Cape Cod Commission

98-05/319 **Nashawannuck Pond Watershed Restoration Project, Easthampton, MA**
by Pioneer Valley Planning Commission

98-06/319 **NPS Pollution Correction in the Farmington River Watershed – Dirt Roads BMP Handbook**
by Berkshire Regional Planning Commission

98-08/319 **Protection of First Herring Brook**
by Town of Scituate

98-09/319 **Manual of Innovative/Alternative Onsite Wastewater Treatment Technologies**
by UMass Amherst

98-11/319 **Development and Demonstration of Protocols for Evaluating Greywater Disposal Systems**
by Massachusetts Department of Environmental Protection

98-12/319 **Demonstrating the Use of Eelgrass Monitoring to Assess Coastal Nonpoint Source Pollution**
by Massachusetts Department of Environmental Protection

98-07/319 **Reducing Stormwater in an Ultra-Urban Watershed**
by City of Somerville

99-01/319 **Alternative Septic System Test Center Project Monitoring**
by Buzzards Bay Project

99-03/319 **Pontoosuc Lake Watershed Resource Restoration Project**
by Berkshire Regional Planning Commission

99-04/319 **Winsegansett Salt Marsh Restoration Project**
by Town of Fairhaven

99-05/319 **Telecom City: Malden, Medford, Everett**
by Mystic Valley Development Commission

99-06/319 **Development of Recharging Stormwater Control Structures and Flow and Volume Design Criteria**
by UMass/Amherst

99-07/319 **Design and Guidance for Shallow Trench Low Pressure Pipe Distribution Systems for the Massachusetts Title 5 Innovative/Alternative Septic System Program**
by UMass/Amherst

99-08/319 **Mill River Watershed Restoration Project**
by Franklin Regional Council of Governments

99-09/319 **Demonstration of Best Management Practices to Control Agricultural NPS Pollution**
by Massachusetts Department of Food and Agriculture

99-11/319 **Coastal Zone Management Stormwater BMP Monitoring Project**
by Massachusetts Department of Environmental Protection and Office of Coastal Zone Management

00-01/319 **Implementing the Diagnostic/Feasibility Study Recommendations for Onota Lake**
by the Berkshire Regional Planning Commission

00-02/319 **Alternative Septic System Test Center Project Monitoring**
by the Barnstable County Department of Health and the Environment

00-03/319 **Development of a Rapid Field Test for the Quality of Stone Aggregate in Onsite Septic Systems**
by the Barnstable County Department of Health and the Environment

00-04/319 **Connecticut River Watershed Restoration Phase II**
by the Franklin Regional Council of Governments

00-05/319 **Atlas of Stormwater Discharges**
by the CZM Buzzards Bay Project

00-06/319 **Management Strategies for MA Dairy Farms to Reduce the Risk of Nonpoint Source Pollution**
by UMass Amherst

00-07/319 **Town of Acton Nonpoint Source Control Program**
by the Town of Acton

00-08/319 **Long Pond Restoration Project**
by the Town of Littleton

00-09/319 **Onset Bay, Wareham, MA, Nonpoint Source Pollution Remediation Project**
by the Town of Wareham

00-10/319 **Shaw's Plaza Drainage NPS Management**
by the Town of Sharon

01-01/319 **Lake Cochituate, Snake Brook NPS Remediation, Phase I**
by the Department of Environmental Management

01-02/319 **Boat Waste Oil Recovery Program for New Bedford Harbor**
by the Massachusetts Coastal Zone Management Buzzards Bay Project

01-03/319 **Parker Pond Restoration, Gardner**
by the City of Gardner

01-04/319 **Massachusetts Buffer Manual and Demonstration Projects**
by the Berkshire Regional Planning Commission

01-05/319 **Evaluation of Phosphorus Removal in Onsite Septic Systems**
by the Barnstable County Department of Health and the Environment

01-06/319 **Memorial Pond Restoration, Phase I**
by the Town of Walpole

01-07/319 **Wareham NPS Remediation Program: East River, Broad Cove, Muddy Cove**
by theTown of Wareham

01-08/319 **Gray's Beach Park Restoration, Kingston**
by the Town of Kingston

01-09/319 **Nashawannuck Pond Restoration, Phase II**
by the City of Easthampton

01-10/319 **Development and Demonstration of a Lake Watershed Survey Program**
by the Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement/Riverways Program

01-12/319 **Cranberry Bog Phosphorus Dynamics for TMDL Development**
by the University of Massachusetts Cranberry Experiment Station